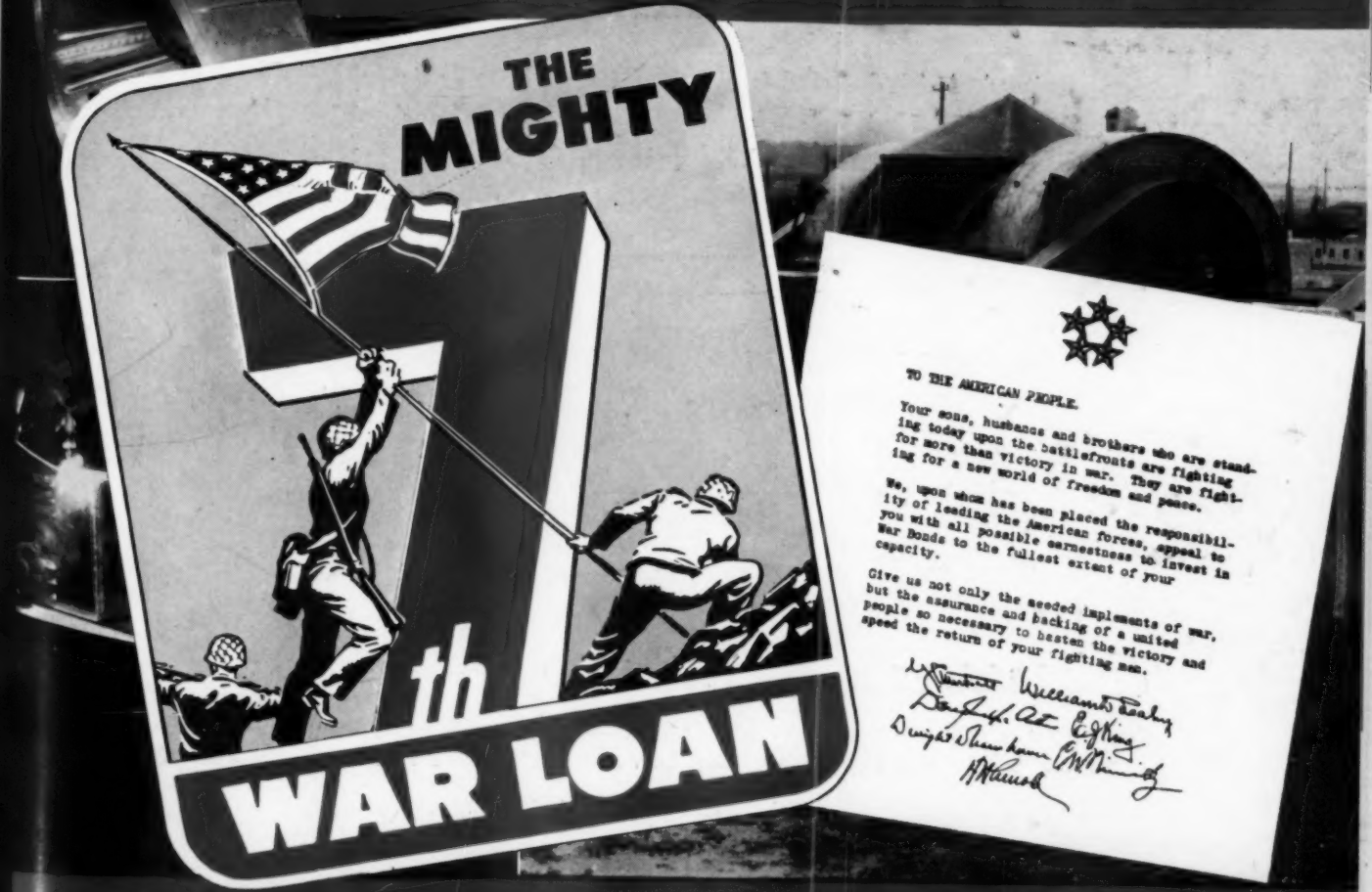
AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING - - SHEET METAL CONTRACTING



TO THE AMERICAN PEOPLE.

Your sons, husbands and brothers who are standing today upon the battlefronts are fighting for more than victory in war. They are fighting for a new world of freedom and peace.

We, upon whom has been placed the responsibility of leading the American forces, appeal to you with all possible earnestness to invest in War Bonds to the fullest extent of your capacity.

Give us not only the needed implements of war, but the assurance and backing of a united people so necessary to hasten the victory and speed the return of your fighting men.

Harry S. Truman, Wm. D. Leahy, Henry H. Arnold, Ernest J. King, Dwight D. Eisenhower, Chester W. Nimitz

JUNE, 1945

Organizing for Old House Sales ..... Page 48
New Manual Guarantees Better Heating Results ..... Page 65
Work Disabled Veterans Can Do in Sheet Metal Shop ..... Page 80

CLAYTON & LAMBERT MFG. CO.

Have Arranged To Take Over
The Line Of

- Furnace Pipe
- Furnace Pipe Fittings
- Air Conditioning Ducts
- Air Conditioning Fittings

Formerly Manufactured and Distributed by

LAMNECK PRODUCTS, INC.

of Middletown, Ohio

Production will be increased to a large volume of improved products as rapidly as materials are available.

The policy of distributing through established jobbers will be continued.

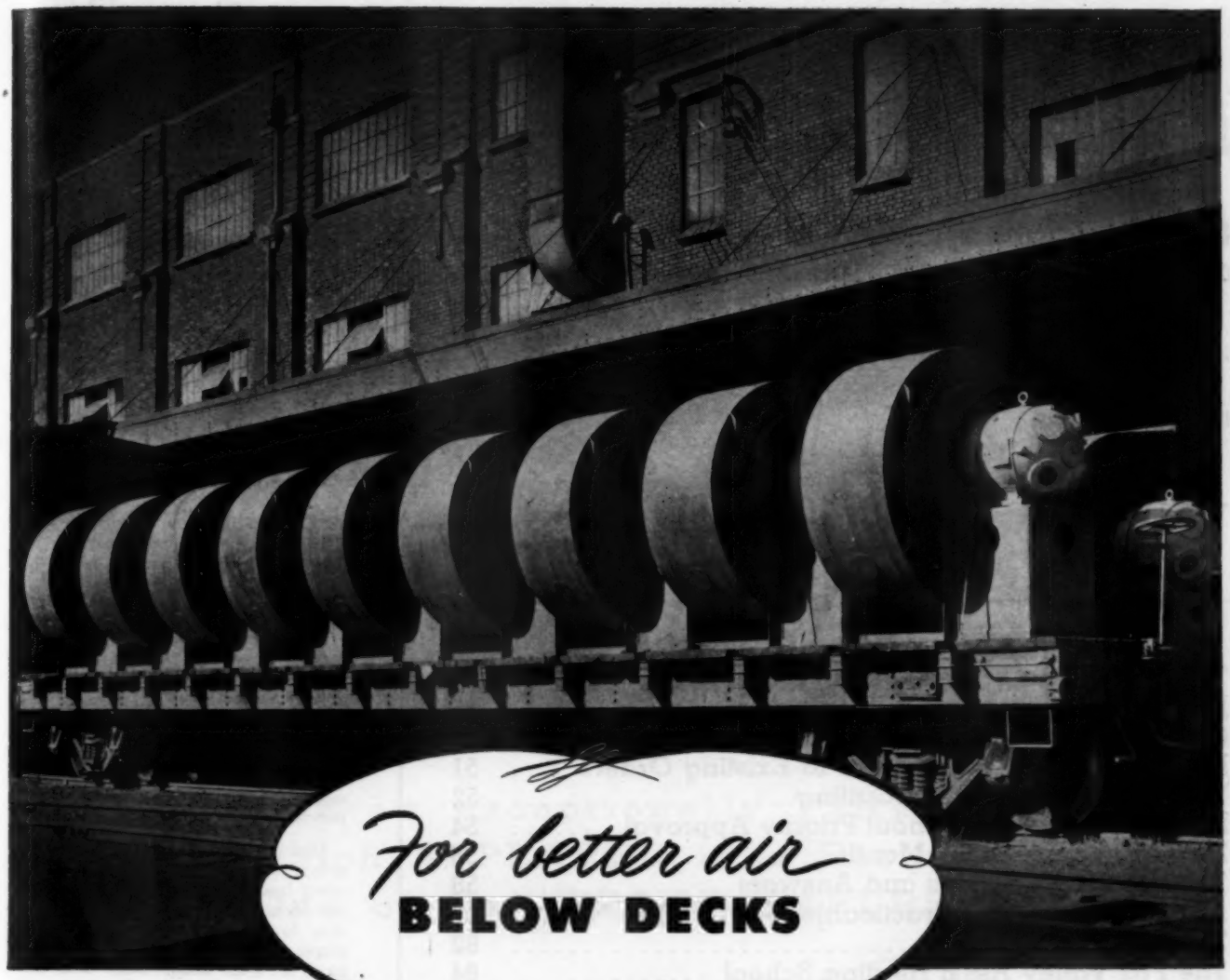
Production and Sales will be centralized at Middletown, O.

Address all inquiries to

CLAYTON & LAMBERT MFG. CO.

Middletown Division

MIDDLETOWN, OHIO



For better air
BELOW DECKS

Carloads of usAIRco ventilating blowers of the backwardly curved type are leaving weekly for rush ship yard installation.

These blowers meet every requirement for below deck ventilation so essential to the health and safety of our fighting men. They are of non-overloading design, small horse power consumption and of highest possible capacity for their size and weight.

Dynamically balanced to provide vibration free operation, hot dipped galvanized to prevent corrosion, they are designed and built to withstand the severe conditions encountered in maritime duty under conditions of war.

usAIRco manufactures a complete line of air conditioning equipment designed to meet the job requirements of every installation. Complete information on all usAIRco products will be furnished promptly.

UNITED STATES AIR CONDITIONING CORPORATION

Makers of the most complete line of air handling equipment • Factory Representatives in Principal Cities

2101 Kennedy Street Northeast — **Northwestern Terminal, Minneapolis, Minn.**

Heavy Duty Blower

Evaporative Kooler-aire

Unit Heater

Coil

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 114, No. 6 — June, 1945 — Founded 1880

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In This Issue

BEGINNING on page 45 and continuing through page 62, we report in summaries and in detail the "unwinding process" which all industries are now beginning.

The process of picking up civilian production and distribution where we left them in 1941 is in itself a tremendous task. But when this unwinding is further complicated by the addition of new products, new methods, new labor forces, we begin to realize that the last half of 1945 has all the earmarks of becoming a truly hectic period.

Many of the control orders under which this industry has been operating have been revoked within the last month. The person who does not stop to think may get, from newspaper reports, the idea that conversion is well under way and that within a few weeks everything will be rosy.

Nothing could be farther from the truth. Merely revoking control orders is only the beginning. What we really have, now, is a license to scramble for materials. We don't have the materials—only the right to hunt for them.

Unfortunately, also, much publicity has been given a deadline—July 1—after which control is supposed to be "open-ended" and materials free for the ordering. It just isn't going to happen that way. For the "low-down" on this imaginary millennium read Arnold Kruckman's Washington Letter—page 46.

What has actually been done and what you actually can do—is arranged by similarity of interest in the news pages of this issue. The summaries are necessarily brief, but the "meat" of the situation is, we believe, contained in the reports.

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COAL *Gravity* **OIL** *Forced Air* **GAS**

MODERN SYNCROMATIC STEEL FURNACES

Gentlemen of the Trade!

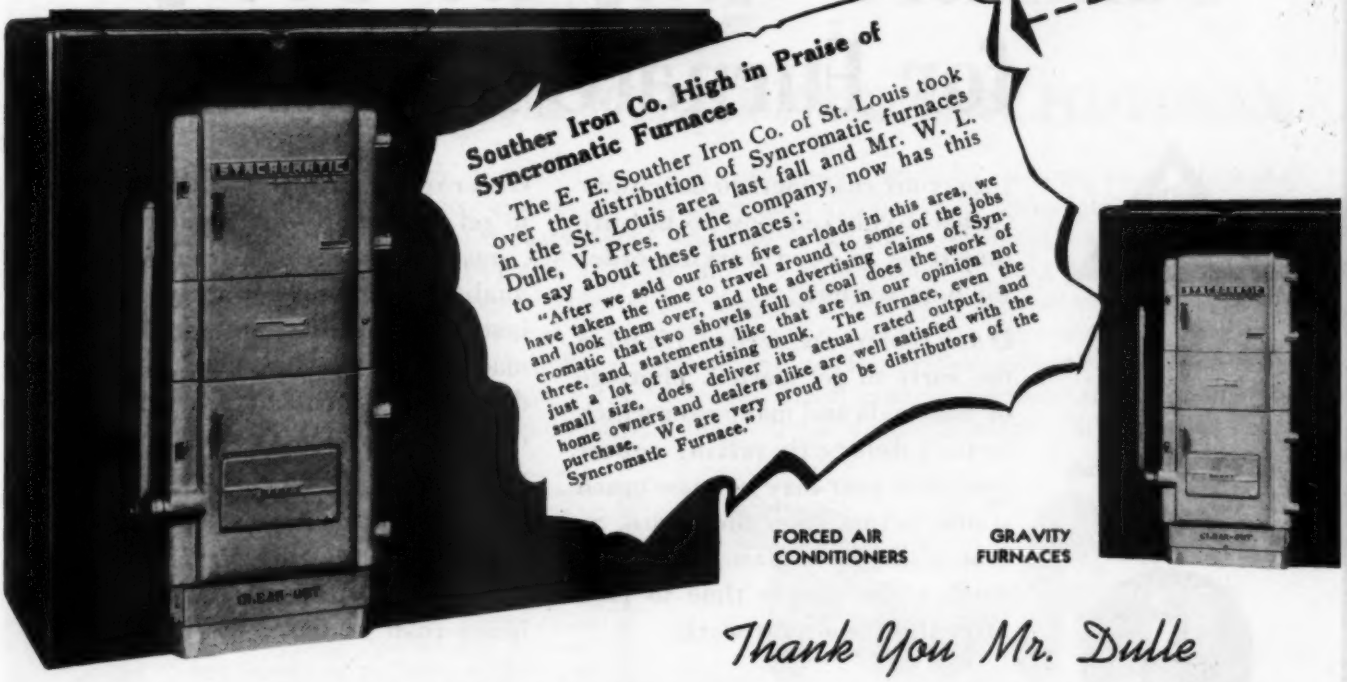
A TRIBUTE to a WIDE AWAKE FIRM

The

E. E. SOUTHER IRON CO.

of ST. LOUIS

For an exceptionally FINE TRIBUTE which APPEARED in a Recent Issue of One of Our TRADE PAPERS . . . . .



Souther Iron Co. High in Praise of Syncromatic Furnaces

The E. E. Souther Iron Co. of St. Louis took over the distribution of Syncromatic furnaces in the St. Louis area last fall and Mr. W. L. Dulle, V. Pres. of the company, now has this to say about these furnaces:

"After we sold our first five carloads in this area, we have taken the time to travel around to some of the jobs and look them over, and the advertising claims of Syncromatic that two shovels full of coal does the work of three, and statements like that are in our opinion not just a lot of advertising bunk. The furnace, even the small size, does deliver its actual rated output, and home owners and dealers alike are well satisfied with the purchase. We are very proud to be distributors of the Syncromatic Furnace."

FORCED AIR CONDITIONERS

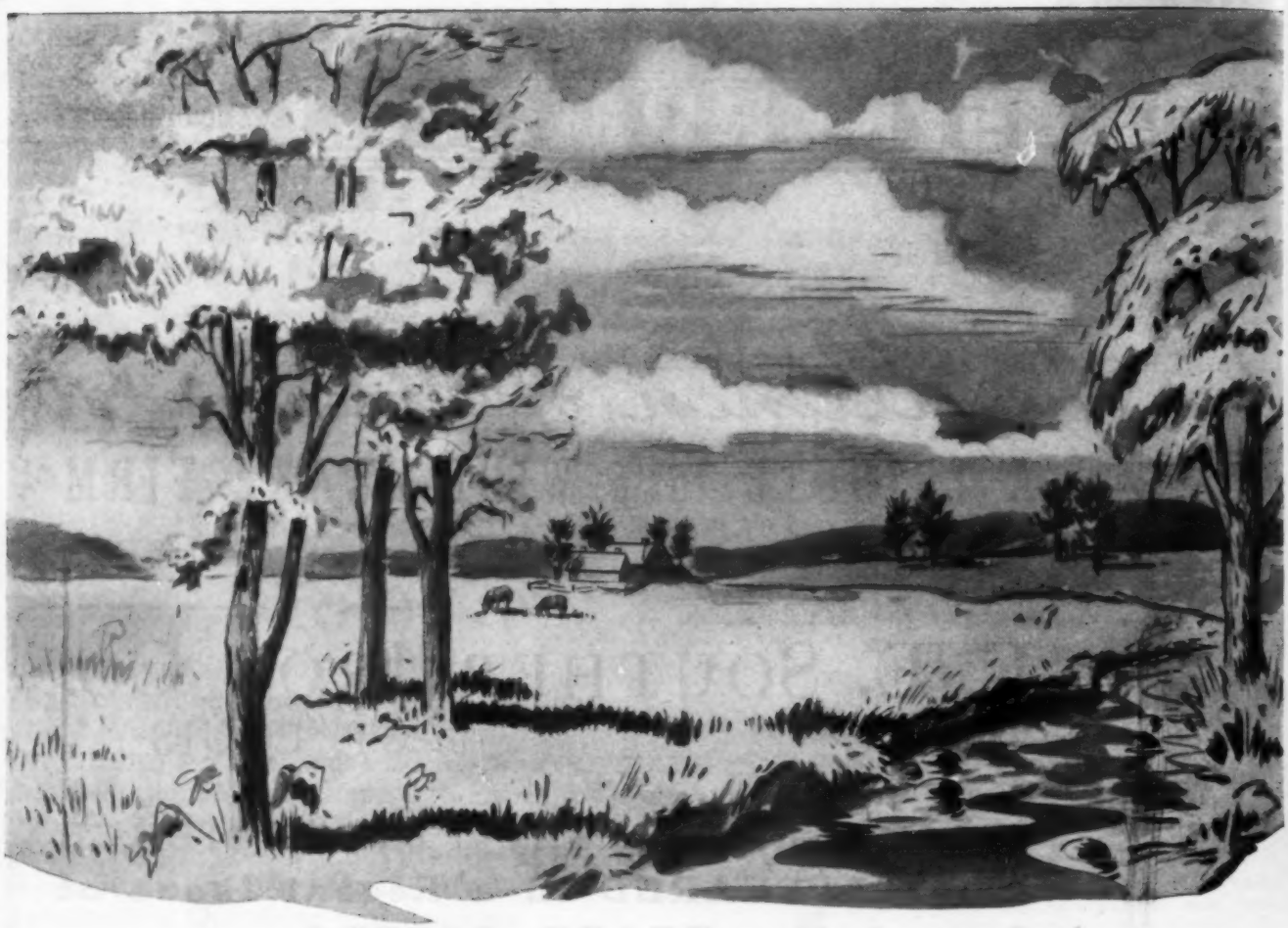
GRAVITY FURNACES

Thank You Mr. Dulle

Your remarks should and will be an inspiration to those who will want "Better Heating for Better Living" with Syncromatic.

SYNCROMATIC CORPORATION

5110 NORTH THIRTY-FIFTH ST., MILWAUKEE 9, WISCONSIN



Summer's *None too soon* for Furnace Repair

Urge your customers to have their furnaces checked now to be sure they'll be in good working order for next winter.

If any repairs are needed, it's none too early to get started. Shortage of materials and manpower which caused delays in getting repair parts last year may not ease much if any, before snow flies again. So now, while the furnace is not being used, is the proper time to look after this important work.

Order repair parts now and be sure to get genuine Rybolt repair parts ...made from original patterns with quality materials. They are easier to install because they are accurately made to fit. They are sure to give dependable, satisfactory service because they are identical with parts used in the original Rybolt unit.

Get your orders in now so that we will have ample time to take care of your requirements before the heavy rush starts.

Buy an Extra War Bond

THE RYBOLT HEATER COMPANY

615 MILLER STREET ★ ASHLAND, OHIO

Pre-selected TO WORK TOGETHER FOR SUPERIOR PERFORMANCE

Pre-selection of controls by your manufacturer's trained engineers is your best assurance of peak efficiency and greater freedom from service in the automatic heating installations you sell. The reason is that both controls and heating units have individual characteristics and design features which must be carefully coordinated to work together — engineered as an integral factory package — for maximum efficiency, economy and dependability.

"Coordinated Controlled Heating" helps you make more sales with less effort. Prospects have more confidence when you tell them that controls and heating unit are coordinated to work together efficiently — not assembled hit or miss from unrelated parts. Doubt and confusion are eliminated, too, when controls and heating unit are sold under the same trade name. Then, controls become an important feature — not a stumbling block — in your sales story.

LIMIT CONTROLS

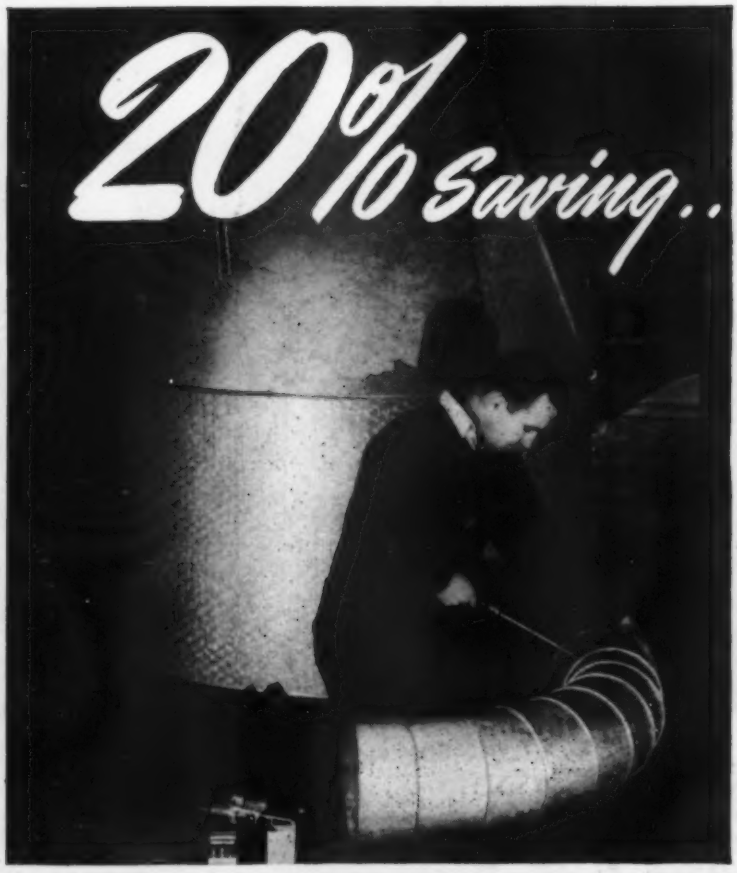
Limit controls are produced by Perfex to the requirements of a long list of leading manufacturers of automatic heating equipment. Featuring rapid response, accuracy and dependable performance, these controls are available for warm air, hot water and all types of steam, vapor and vacuum installations.

Ask Your Manufacturer for Details on the Features of Perfex Limit Controls Used in Coordinated Controlled Heating.

Perfex
CORPORATION

500 W. OKLAHOMA AVE. MILWAUKEE 7, WISCONSIN

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS

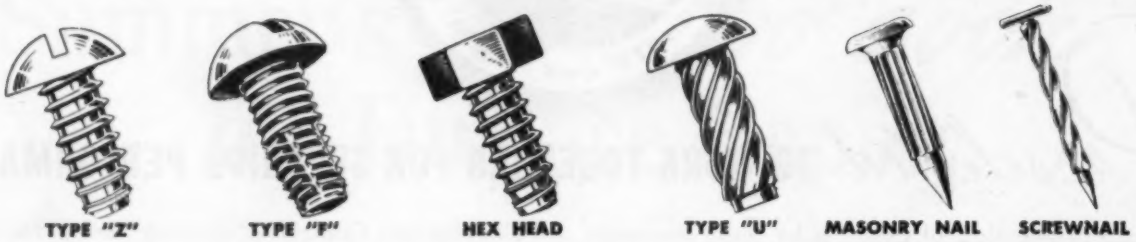


20% Saving.... and that's only the beginning!

Like most experienced sheet metal workers, this man knows Parker-Kalon Type "A" Sheet Metal Screws – knows they always work right and hold tight. His company, Friedberg, Inc., New Brunswick, N. J., has used P-K Screws for 25 years... "Save us at least 20% in time and labor", they say.

And such savings with Type A are "only the beginning" for sheet metal men who get acquainted with the whole P-K family.

Meet the rest of the family and *beat* your high assembly costs!



Each has special advantages that make it the simplest, most efficient fastening device for some one of the jobs you are up against every day. Savings of up to 50% of the assembly time and labor required for machine screws, bolts, and other fastening methods are often reported.

THE "USERS' GUIDE" shows which type of P-K Screw to use for assembling different kinds and thicknesses of materials, and how to do the job. Packed with easy-to-find, useful information – file size, and fitted with a wall hanger. Write for a copy.

FREE samples, tell us what you want to fasten, and we'll send the correct type of P-K Screw. Parker-Kalon Corp., 208 Varick St., New York 14.

PARKER-KALON
Quality-Controlled
SHEET METAL SCREWS

A Product of PARKER-KALON... Specialists in Fastening Devices

THIS TRADEMARK...

WILL SHORTLY APPEAR ON AN ENTIRELY NEW LINE

of oil heating equipment — new, yet thoroughly tried out in the war. Since the early days of the oil heating industry — Master Kraft products have always embodied high quality and advanced engineering — and have BEEN BACKED by the kind of advertising and sales promotion that sells merchandise.

Master Kraft Dealers have made money — built new customers — increased their business each year.

NOW — with the new Master Kraft POSTWAR line, the profit opportunities for dealers will be greater than ever.

Before you sign any oil heating franchise — SEE the sensational new Master Kraft line.

We repeat . . . it's NEW . . . and something you should SEE.
Write for details.

HARVEY-WHIPPLE, INCORPORATED

SPRINGFIELD 1, MASS.

WISE FURNACES

For three years shortages of materials and man power have caused delays and difficulties in production. The situation is improving.

Materials are not much of a problem, but the labor shortage still exists. Men are needed for our armed forces and for production of critical war materials. V-E Day has helped and V-J Day is not far away.

Soon the Wise Furnace Company will be back to normal production. WISE FURNACES are now available in limited quantities. Do not wait until the last minute to place your orders. Send in orders for furnaces and repair parts NOW. We will do our utmost to serve you satisfactorily.

THE WISE FURNACE COMPANY AKRON 8, OHIO

Toncan Iron has twice as much Copper

to give it the Highest Rust-Resistance of All Ferrous Materials in its Price Class

You'll immediately recognize the rust-resisting qualities of the second ingredient of Toncan Iron. It's Copper (Cu)—and there's twice as much of it in Toncan Iron as in copper-bearing steel.

That's another reason why Toncan Iron—well and favorably known for more than 35 years—has the highest rust-resistance of all ferrous materials in its price class.

Toncan Iron fights rust better, too, because it is made from highly refined open-hearth iron.

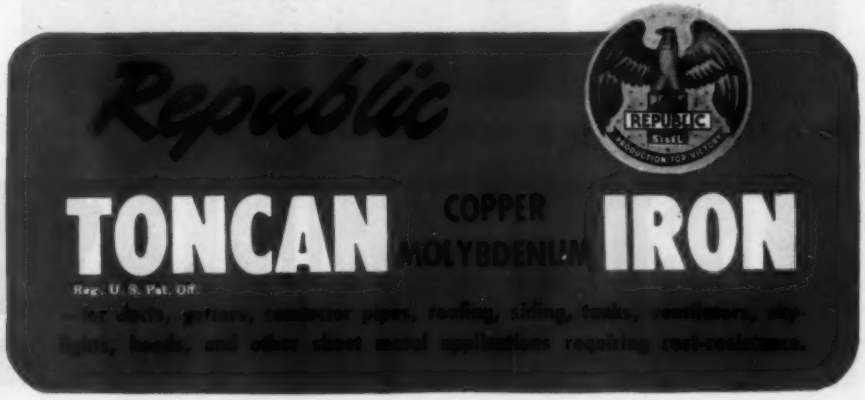
The rust-resistance of Toncan Iron is further improved by alloying *molybdenum* with the copper. This important element makes the copper more effective and helps produce in Toncan Iron a rust-resistance that is unaffected by various methods of fabricating.

From the commercially pure open-hearth iron and the special processing operations, Toncan Iron derives another outstanding quality—high ductility. This makes it one of the easiest materials to work.

If you want a better answer to your needs for a rust-resistant material, you'll find it in the formula for Toncan Iron—the formula for longer service and lower costs.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Bldg., New York 17, N.Y.

Get the full scale account of the customer-satisfying, profit-building performance of Toncan Iron in Booklet No. 410, "How Toncan Iron makes Money for Sheet Metal Contractors and Fabricators."



Insist on Genuine

Keep Your A·R·A Inventory Up!

You can only be sure of the Inventory you actually have on hand when scheduling your jobs. You can't fabricate duct work or seal in joists with rumors, promises, or hopes. Now is the time to take advantage of the availability of A-R-A Sheets — tested, approved and pronounced the most satisfactory and safest sheet of its kind on the market today! A-R-A Sheets are a full and unlimited substitute for sheet steel in the Heating and Ventilating field. A-R-A Sheets are now available — Order Today.

An A-R-A Sheet is easy to handle because it is a "one man" sheet.

Asbestos-clad A-R-A Sheets are tough yet flexible (Mullen-tested over 200 lbs. per sq. in.)—rigid but not brittle—fire-proofed and water-proofed—are light in weight, will not dry out, crack, crumble, or chip, have a high insulating value (K .45 B.T.U.) and good sound-deadening properties. They are easy to handle, will bend without breaking and can be rolled, punched, scored and die cut, still retaining their rigidity and strength.

CARTON CONTENTS
20 Sheets 33"x48" Per Carton

SHIPPING WEIGHT
Approximately 100 lbs. per Carton

SHEET THICKNESS
Approximately 3/16" thick

Write for our 16-page booklet No. 89-S. Gladly sent on request.

Get genuine A-R-A Sheets from your Jobber.

GRANT WILSON, INC.

141 WEST JACKSON BLVD. AT LA SALLE ST., . . CHICAGO 4, ILL.
(22nd Floor, Board of Trade Bldg. . . . Phone: Wabash 8220)

1,000 DEGREES in 18 inches!

—and quicker, more compact heating for your customers!

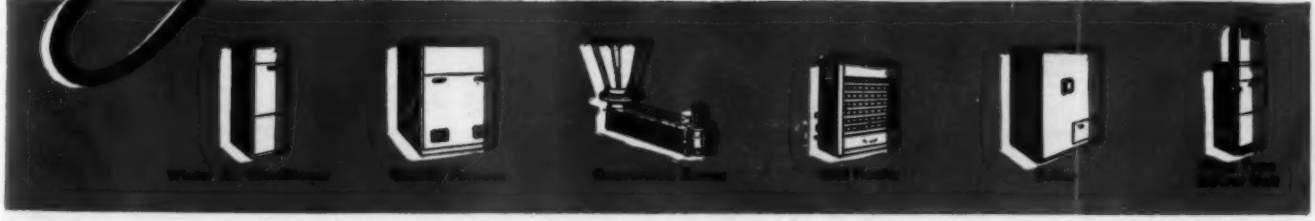
IN a Janitrol Gas-Fired Winter Air Conditioner, the patented cast iron Multi-Thermex heat exchanger tubes are only 18 inches long. But in that 18 inches, enough heat is carried away by the circulating air to cause the hot burning gas to cool *more than 1000 degrees in temperature!* That's *fast* heat transfer . . . and that will mean a *lot* to *your customers.*

First, they get heat *quicker* after the heat is turned on. There's no bulky combustion chamber which must be heated up . . . no excess metal to rob heat the home should be getting. And when the gas is turned off, heat is quickly circulated . . . no fuel is wasted from overheating.

Second, the elimination of the old style combustion chamber by the design combination of Multi-Thermex heating tubes and Amplifire ribbon type burners, makes for extreme compactness . . . less space is required for basement or utility room installations.

This feature of rapid heat transfer is only *one* of Janitrol's many advancements in furnace design. Every one of Janitrol's many developments has been engineered to provide better performance, longer life, and greater economy of operation for the customers you will sell as soon as equipment is again available. For complete information on Janitrol Gas-Fired heating equipment, write Surface Combustion, Toledo 1, Ohio.

Janitrol GAS-FIRED HEATING EQUIPMENT



The $64,000,000 Question!

Q. What appliances will open brand new markets?

A. Those providing comfort all year 'round.

In the postwar building program there will be a tremendous new demand and a steadily growing market for evaporative air coolers, forced air heating and ventilating appliances that will provide comfort all year 'round — at home and work.

Distributors and dealers who handle the UTILITY line will have a complete range of proven appliances, for profitable sales all through the year. Now is a good time to investigate the market possibilities of UTILITY equipment, when it again becomes available for civilian distribution.

UTILITY

UTILITY APPLIANCE CORP.

Formerly Utility Fan Corporation

4851 S. Alameda St., Los Angeles 11, Calif.

CONCO heat

NOW IN PRODUCTION!

THE NEW

CONCO STOKER

Production in quantity is now under way on the *New* CONCO STOKER; first deliveries have already been made. It is, we earnestly believe, the finest stoker made today. Its features — developed during three years of intensive research, are what post-war buyers will demand. From the powerful, silent INTER-PLANETARY TRANSMISSION to the attractive STREAMLINED HOPPER, the New CONCO STOKER embodies all the qualities that make it stand out as a leader in the field. Chuck full of eye-appeal and sales attraction CONCO is definitely the stoker with a future. Some good territory is still open for competent aggressive distributors with live sales organizations and successful merchandising background.

The New CONCO DOMESTIC STOKER — as good as it looks — built to *sell* and *serve*.

CONCO ENGINEERING WORKS MENDOTA, ILLINOIS

then he said to himself

"Don't ever wobble"

TODAY'S prize "Didn't-I-tell-you" goes to Emperor Haile Selassie for his prewar speech in the late League of Nations . . .

—in which he voiced this prophecy:

> "As long as you subordinate justice to peace—you will achieve neither justice nor peace."

He now has a modified amount of each—but he took an awful cuffing—and outside aid had to help him back on his pedestal.

Justice simply cannot be trifled with—because its effect is far-reaching with peoples as with products . . .

—for in the making of products, especially, justice must be accorded to

(a) the design
(b) the cost
(c) the output
(d) the worker
(e) the stockholder
(f) the user

—otherwise that product gets slapped off its pedestal.

Justice is simply honesty in action—such as—

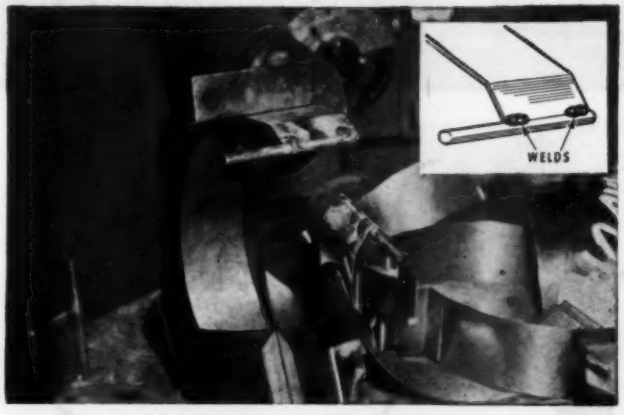
"Straight Thinking Pays"... *he says*

LOOK EMPEROR, how straight thinking with Arc Welding provides the key to postwar profits in sheet metal contracting:

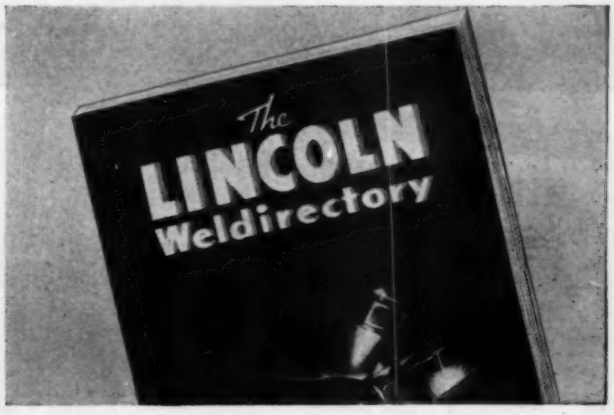
"The flexibility and speed of Arc Welded fabrication enables us to handle a greater volume and variety of work and to produce better products at lower cost," says P. Feiner, New York, N. Y.

INGENIOUS. Storage bin for nuts and bolts designed for installation around a round building column to conserve floor space. 18 ga. black iron. Welded with "Fleetweld 7."

GOOD-LOOKING. Fabricating aluminum instrument panels for aircraft from ⅛" aluminum sheet using "Aluminweld" electrode. All joints are corner welds . . . uniform and smooth.



SIMPLE. Guards for rotating knives of a food machine. Sheet and rods of 18-8 stainless steel arc joined by two simple tack welds as shown with "Stainweld A5".



HOW-TO-DO-IT MANUAL, describing and giving procedures for 38 Lincoln Electrodes is yours for the asking. Write on your letterhead, asking for Bul. 402.

THE LINCOLN ELECTRIC COMPANY • DEPT. L-2 • CLEVELAND 1, OHIO

America's greatest natural **recourse**

ARC WELDING

"HERE'S MY POST-WAR PLAN . . .

With This Line I'll Sell EVERY Real Prospect"

HERE'S WHY . . .

WEIR-MEYER

MEANS *Modern Heat*

FOR ALL FUELS . . . FOR ALL HOMES

With WEIR-MEYER I can offer heating equipment as modern as the NEW homes Americans are planning. There's a WEIR-MEYER for cottage or mansion!

I'll sell WEIR-MEYER to those who have tagged their War Bonds "remodeling". The WEIR-MEYER line is complete—the right equipment for every prospect.

WEIR-MEYER is the natural choice when maximum convenience is required. The WEIR-MEYER line includes dependable, trouble-free, fully automatic equipment.

WEIR-MEYER MEANS MODERN HEAT

Longer years of experience, advanced engineering, and designing skill have made leadership a habit with WEIR-MEYER. As manpower and materials become available, there will be increasing quantities of WEIR-MEYER equipment for civilian needs. Post-war WEIR-MEYER equipment offers the finest ever.

MEYER Oil - fired AIR CONDITIONER gives the user of oil a new conception of cleanliness, efficiency and economy of operation.

MEYER Gas - fired AIR CONDITIONER built for efficiency and durability. Easy to install, finer performance, greater convenience.

The NEW WEIR U Series STEEL FURNACE. Famous WEIR reputation plus exclusive and entirely new features.

I'm assured more sales advantages with WEIR-MEYER. For example, their performance record is unequalled. Many WEIR furnaces have been in continuous operation for 50 years—and are still going strong. I can base my sales talk on facts—not just promises.

● If you want to serve your community better—and profitably—get the facts about a WEIR-MEYER dealership. Some territories are "open". National advertising has already created a ready-made market for WEIR-MEYER equipment.

THE MEYER FURNACE CO.

Weir and Meyer Furnaces . . . Air Conditioners for COAL . . . GAS . . . OIL **Peoria 2, Illinois**

THE MEYER FURNACE COMPANY PEORIA, ILLINOIS

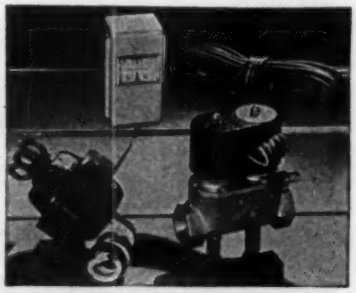
Controls--buy the package

General Controls presents 8 convenient

packaged sets, for compact inventory and convenient installation

T-30—GAS HEATING PACKAGE SET
T-30—This set includes silent 2-wire gas valve, 2-wire Metrotherm, transformer, 30 feet of wire. Ideally adaptable to gas-fired boilers, floor furnaces, conversion burners and warm air furnaces.

Here are eight finely engineered, field proved package sets most frequently needed by heating contractors and engineers. Instead of purchasing piece-by-piece, buyers can select complete sets in compact cartons, each set including essential units required, thereby avoiding cost and delay in extra bookkeeping, ordering and handling individual items. Ask for new Service and Instruction Manual on Automatic Gas Heating Controls, No. *SI*-100.

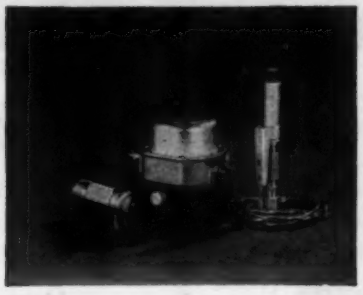


T-40—GAS HEATING PACKAGE SET
T-40—Includes dual Thermostat, dual valve, transformer and 30 feet of wire. Provides fully automatic, hi-low firing, maintaining ideal temperature control and lowered fuel cost.

T-90 STANDARD THERMOMETER SET
Set combines improved B-60 Gas Valve, flush mounting Trimtherm, (with or without thermometer, or Timer Thermostat), Pilot Burner Generator and 30 feet of wire. Positive remote control for gas and floor furnaces, boilers, circulators, radiators.

T-23—OIL HEATING SET
For remote thermostatic control of oil heating furnaces, circulating heaters, conversion burners, etc. Includes solenoid oil valve with by-pass adjustment for minimum flow regulation or pilot, two-wire metrotherm, transformer and 30 feet of control wire.

T-85 PLAIN THERMOSTAT SET
Includes B-60 Valve, Pilot Generator, Thermostat and 30 feet of control wire. Suitable for manufactured, mixed or natural gas. No outside current required, thermocouple pilot generator provides current for valve operation.



BX-250 WATER HEATER SET
New all-gas electric set combines tank Thermostat, B-60 Gas Valve and Pilot Generator for hot water heater applications. Remote thermostat, clocks or other limit controls may be connected in circuit.

T-95 TIMER SET
Includes B-60 Valve, Pilot Generator, Timer, Thermostat and 30 feet of wire. Pilot Generator provides current, upon extinguishment of pilot flame, current ceases and valve closes.

T-100—RELAY PACKAGE
For control of coal stokers, air-conditioning equipment, saw dust burners, blower furnaces, hot water heating, industrial applications. Includes Relay, Thermostat and 30 feet of 2-wire cable. 2-wire, low voltage control circuit.

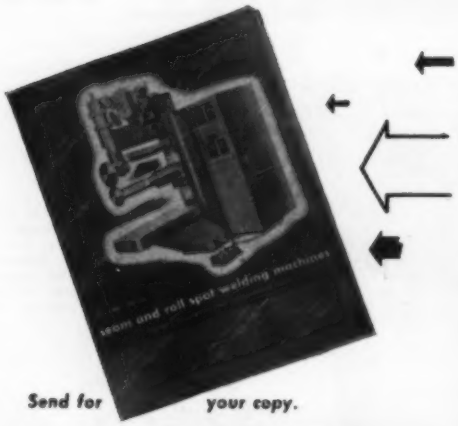
GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.

FACTORY BRANCHES: Philadelphia, Atlanta, Boston, Chicago, Dallas, Kansas City, New York, Denver, Detroit, Cleveland, Pittsburgh, Houston, Seattle, San Francisco. Distributors in Principal Cities.

"Sewing" metal into pressure-tight seams

at 108" per min.

Lessons learned in SEAM WELDING war materials can cut your post war fabricating costs



Send for your copy.

Seam welding operations, like the one above at General Outdoor Advertising Co., Jacksonville, Fla., are teaching us much that can apply to peace time products. Refinements in machine design, developments in special conveyors and jigs, can cut production time on many items. Using uninterrupted current, speeds up to 108" per minute can be reached on thin gauges. Heavier stock requires interrupted current and may be welded into pressure-tight seams as fast as 78" per minute.

Sciaky has a seam welder for *your* application. A new booklet describing our 180 KVA series machines and including much general information is yours for the asking. Write for bulletin 113-A.

SCIAKY BROS., 4915 W. 67th ST., CHICAGO 38, ILL.

Offices in New York, Washington, Cleveland, Detroit, Los Angeles
Representatives in principal cities. Plants in London and Paris

SCIAKY

ELECTRIC RESISTANCE WELDING EQUIPMENT

CHECK THE FACTS AND YOU'LL FIND...

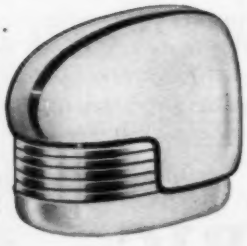
YOUR POSTWAR OIL-O-MATIC WILL BE *AS GOOD TO LOOK AT* AS IT IS TO LIVE WITH

"A thing of beauty is a joy forever."

Thus did John Keats poetically express a truth that has all too often been overlooked by heating equipment manufacturers. Williams Oil-O-Matic proposes to make good use of this truth by building postwar Oil-O-Matics that are as good to look at as they are to live with.

Just what the design of the new Oil-O-Matic units will be, we cannot divulge now . . . any more than we can their eventual revolutionary new operating features. But you can depend on this—they will be as compact, as handsome, and as much a proud possession as any of the modern household appliances planned for postwar homes.

Need we remind you that this new Oil-O-Matic eye appeal will be a tremendous sales advantage?



Tomorrow's finer, handsomer Oil-O-Matics must await the outcome of battle. Meanwhile Oil-O-Matic will continue to produce war materials with the same zeal that has *4 times* won the Army-Navy "E", as well as the USAAF *"Approved Quality Control Rating."*

WILLIE O-MATIC says: *"Hang on to the War Bonds you buy if you want to hang on to the liberty you love."*

WILLIAMS OIL-O-MATIC HEATING

COPR. 1945, WILLIAMS OIL-O-MATIC HEATING CORP.

WILLIAMS OIL-O-MATIC HEATING CORPORATION • BLOOMINGTON, ILLINOIS

How a General Electric Automatic Warm Air Heating Dealership Will Help You Cash In on the Postwar Home Heating Boom

In your locality, hundreds of individuals will build new homes . . . hundreds more will replace old, worn-out heating plants . . . after Total Victory.

That's the market that will be ready and waiting for you...and one you can easily crack when you offer G-E Automatic Warm Air Heating Equipment.

And you don't need a high-pressure sales talk to sell G-E. Your prospects *know*—from the word-of-mouth boasts of satisfied users, from consistent G-E advertising and promotion—that General Electric means tops in comfortable, thrifty heating. They have full confidence in the quality, integrity and research that stand back of the G-E monogram.

There's clear-cut proof of this popular preference in the sales records of speculative builders. In two developments, where buyers had a choice of heating systems, 50 out of 150 and 73 out of 173, chose the G-E equipped homes—*and paid extra to get them!*

The evidence piles up! In another development . . . *where G-E units were featured in the advertising* . . . 78 houses were sold in the first four weeks!

The equipment that can sell houses can certainly sell *itself!* And postwar, G-E units will have *new* sales advantages—low cost, higher economies, "packaged" construction for easier installation.

Get ready *now* for your share of the postwar heating market, with this profit-opportunity line . . . write for the facts on a G-E dealership. *General Electric Company, Air Conditioning Department, Section 5536, Bloomfield, New Jersey.*

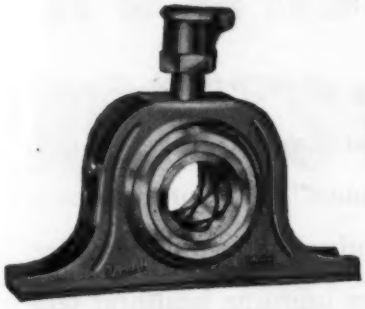
BUY... and hold ...WAR BONDS

GENERAL ELECTRIC

Automatic Heating Equipment

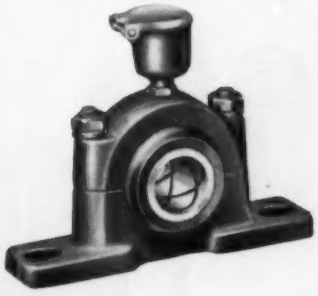
Tune in: The "G-E HOUSE PARTY" every afternoon, Monday through Friday, 4 p. m., EWT, CBS... The "G-E ALL-GIRL ORCHESTRA," Sundays, 10 p. m., EWT, NBC... "THE WORLD TODAY" News, Monday through Friday, 6:45 p. m., EWT, CBS

ONE-PIECE STEEL HOUSING PILLOW BLOCK.
Single Oil Reservoir



NEW STREAMLINED ONE-PIECE STEEL HOUSING PILLOW BLOCK. Either Double or Single Oil Reservoir

STANDARD PILLOW BLOCK
Single Oil Reservoir



For War or Postwar Heating and Air Conditioning Equipment

specify quiet, durable, economical, trouble-free

RANDALL PILLOW BLOCKS

For the greatest efficiency on wartime equipment and for postwar heating and air conditioning units that will soon be in production, be sure to select bearings for the longest trouble-free field operation—Randall Self-Aligning, Self-Lubricating Bearings. There are almost TWO and ONE-HALF MILLION Randalls in service on air-moving units.

Randall engineers, with *OVER A THIRD OF A CENTURY* of experience in the design and manufacture of graphite bearings, have built into the Randall Pillow Block *exclusive features* which have prompted their standard use on most air-handling equipment. Write for catalog.

Representatives Carrying Stocks

C. W. Marwedel
San Francisco, Cal.

Salt Lake Hardware Co.
Salt Lake City, Utah

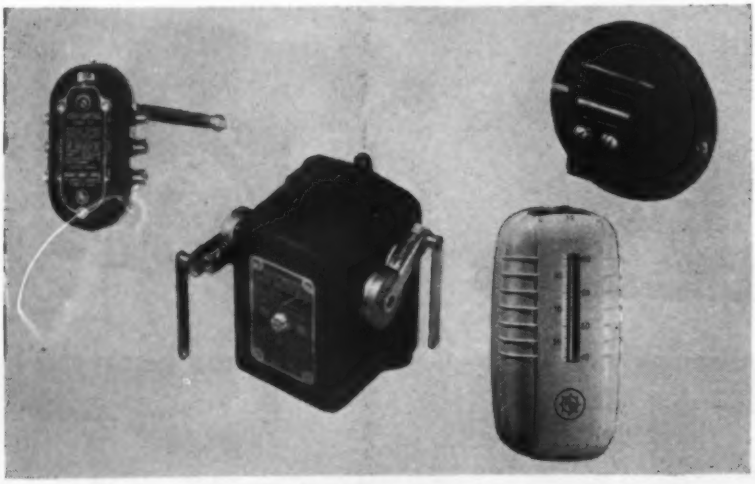
Yak Bearing Company
177 Lafayette, New York 13, N. Y.
510 Cambridge St., Boston 34, Mass.

RANDALL GRAPHITE PRODUCTS CORPORATION

Dept. 611 — 609 W. Lake Street — Chicago 6, Illinois

Automatic Control Saves Tons of Fuel!

BUILD BACKLOG OF INSTALLATIONS NOW!



Installing an "A-P" 3-Piece Automatic Heat Regulator Set is definitely a "must" when production is again permitted. The unit saves fuel and insures uniform, healthful temperatures with hand-fired furnaces.

First, attach an "A-P" Thermostat to an inside wall — about 4 feet above floor is good. This is the *invisible janitor* that "floats" the fire, keeping it at maximum efficiency without heat loss.

Next, Put an "A-P" Limit Control on the bonnet of the furnace. This is essential. It prevents furnace heat overshooting room thermostat settings. Set the Limit Control in accordance with outside temperatures to prevent excessive overheating.

Finally, install the "A-P" Damper Regulator Motor, Connect to both the Room Thermostat and the Limit Control. Parts of this unit are wear-resistant and anti-corrosion treated to avoid rusting from summer basement dampness.

These efficient, fuel-saving A-P-3 piece Automatic Heat Regulator Sets will soon again be available. It's time now to build your backlog of installation orders — for future profits — and help your customers to vital fuel savings.

AUTOMATIC PRODUCTS COMPANY

2470 N. Thirty-Second Street • Milwaukee 10, Wisconsin

DEPENDABLE CONTROLS

FOR HEATING • AIR CONDITIONING • REFRIGERATION

NEW "V-E" VIKING SELLING PROGRAM GUARANTEES PROFITS for BLOWER DEALERS

LOOK AT THIS IMPORTANT FIRST

First of its kind:

a book of facts to help you sell blowers!

The backbone of the Viking program will be a blower demonstrator manual — the first such sales tool ever offered in our industry. You will learn new things and you will use it to talk from, to illustrate with, *and* to close your sale with. This important new Viking sales guide has been tested. It works, because it gives you, as well as your customer, an education in winter air conditioning.

You will also learn (1) How to Find Prospects; (2) How to Select and Sell Blowers; (3) How to Install Blowers; (4) How to Get Repeat Business. This Manual is free on request to authorized Heating Dealers who are interested in the profit opportunity offered by the Blower Industry. We urge you to send for it.

Do you want to learn how YOU CAN CASH IN? . . . . if you do—

WRITE AT ONCE TO

Viking Air Conditioning Corp.
5600 Walworth Ave.
Cleveland 2, Ohio, Dept. A-5

Send at no cost or obligation the new Viking Sales Guide as soon as it is ready.

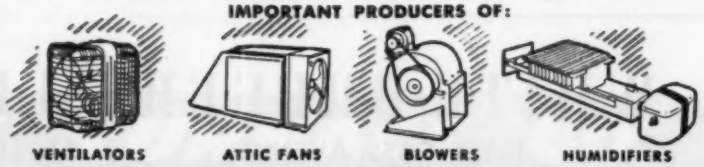
Name.....

Address.....

City.....Zone....State...

Viking

IMPORTANT PRODUCERS OF:



AIR CONDITIONING CORPORATION • 5600 Walworth Avenue • Cleveland 2, Ohio

★ UNUSUALLY *STURDY* SWITCH CONSTRUCTION

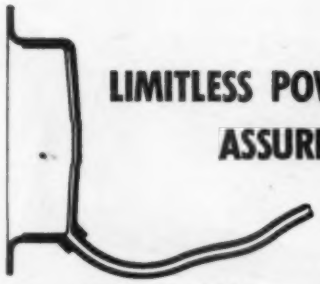
POSSIBLE BECAUSE OF THE SOLID-LIQUID CHARGE

Switches on White-Rodgers controls are so sturdy and strong that it takes all the pressure you can exert with *two* thumbs to make them click. The power of Hydraulic-Action is so great that it readily overcomes this resistance. Because of that power, White-Rodgers can and does build a better, *sturdier* switch into all its controls—a switch that is built to last.

HYDRAULIC ACTION CONTROL

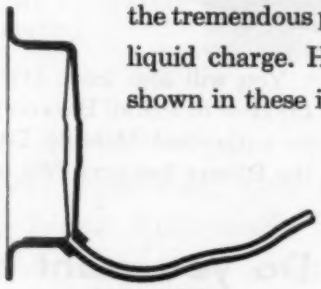
8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
★ 4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



CONTRACTED

Above is a cross section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted, releasing the pressure on the diaphragm and causing the switch contacts to function.



EXPANDED

In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

LIMITLESS POWER OF HYDRAULIC-ACTION ASSURES POSITIVE CONTACT

Every part of White-Rodgers Hydraulic-Action controls is built stronger and *sturdier* because of the tremendous power of the solid-liquid charge. How this works is shown in these illustrations.

Actual-size illustration of the White-Rodgers diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.

WHITE-RODGERS ELECTRIC CO.

1215F CASS AVENUE ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air-Conditioning

We think it high time to express our thanks to both our present and prospective dealers for their exceptional loyalty and patience. We have supplied you with Victor furnaces as speedily as materials, labor and the fabrication of maintained quality Victors permitted. The victory in Europe will release to us more materials in 1945. We will make every possible effort to have more Victors, with heat radiating "FINS", in your hands for installation this fall.

Just Issued
NEW VICTOR PRICE LIST
Write for it.

The universal patience of dealers and customers alike indicates more emphatically than words the quality and desirability of the famous "VICTOR" line. ***They'll wait for a Victor!*** IT'S THE FURNACE WITH HEAT RADIATING "FINS".

In view of improving conditions, contact us now. Present dealers should estimate their needs to help us plan. Prospective Victor dealers should contact us immediately in order to be put on our production schedule.

HALL-NEAL FURNACE CO.
VICTOR *Quality Furnaces Since 1890*
1326 N. CAPITOL AVENUE · INDIANAPOLIS 7, INDIANA

You can help this man!

• He is your customer—the owner of a hand-fired heating plant. And unless he gets some real help he may have a chilly time of it next winter . . . a winter that may see even greater fuel shortages than last heating season.

Start giving that aid now . . . *in your summer service calls.* See that his coal bin gets a break not only by servicing and re-conditioning his heating plant . . . but by recommending *Draftender Controls.* They help to put an end to fuel waste as they eliminate alternate chilling and overheating common with hand-controlled dampers.

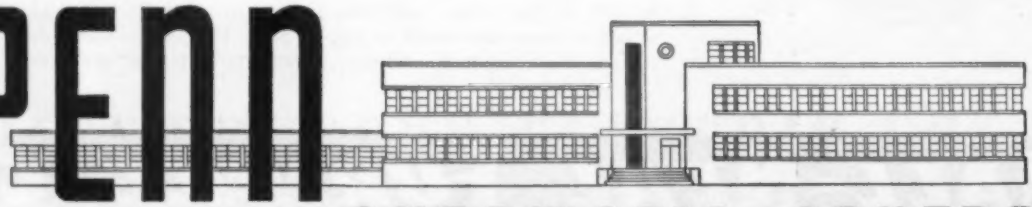
PENN Draftender Control Sets include damper motor, Temtrol—the heat-anticipating thermostat—and limit switch. They do *not require consumer priorities.* They assure more economical firing for *any* hand-fired system—whether warm air, steam or hot water.

Make the selling of Draftender Controls a vital part of your summer service work. You'll be building customer good-will and tying in directly with the government's campaign to save fuel. Order Draftender Control Sets from your local wholesaler today. For further information, write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U.S.A. In Canada: Powerlite Devices, Ltd., Toronto, Ontario.

PENN DRAFTENDER CONTROL SETS

PENN Draftender Controls shown above enable owners of hand-fired heating plants to enjoy the economy and convenience of thermostatic control usually found only in automatic heating systems.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

When you promote
the complete Mueller Climatrol line, you're a

"COMFORT MERCHANT"

on the way to post-war success

Comfort depends primarily on handling and conditioning of *air* – for which the Climatrol system is basically designed

There are six important factors in the conditioning of air:

1. Temperature control.
2. Humidity control.
3. Proper movement of air.
4. Introduction of fresh air.
5. Removal of dust, pollen, and other foreign matter.
6. Removal of bacteria conveyed on dust.

The heating system that today provides the greatest number of these comfort factors is an advanced type of warm air heating system — and that is the type of heating system to which accessories may be added to provide *more* of the six comfort factors, as these accessories are perfected and become available.

Long a leader in the advance of warm air heating toward the goal of *true indoor comfort,* Mueller offers you the most complete line on the market, with units specially designed for efficiency with each of the major fuels — gas, oil, or coal — suitable for old or new homes of every size, type, and price range.

The Mueller Climatrol line is nationally-known, nationally-advertised, backed by an 88-year performance record. It offers a sound foundation upon which you can build a successful business. Write for bulletins. *L. J. Mueller Furnace Co., 2010 W. Oklahoma Ave., Milwaukee 7, Wis.*

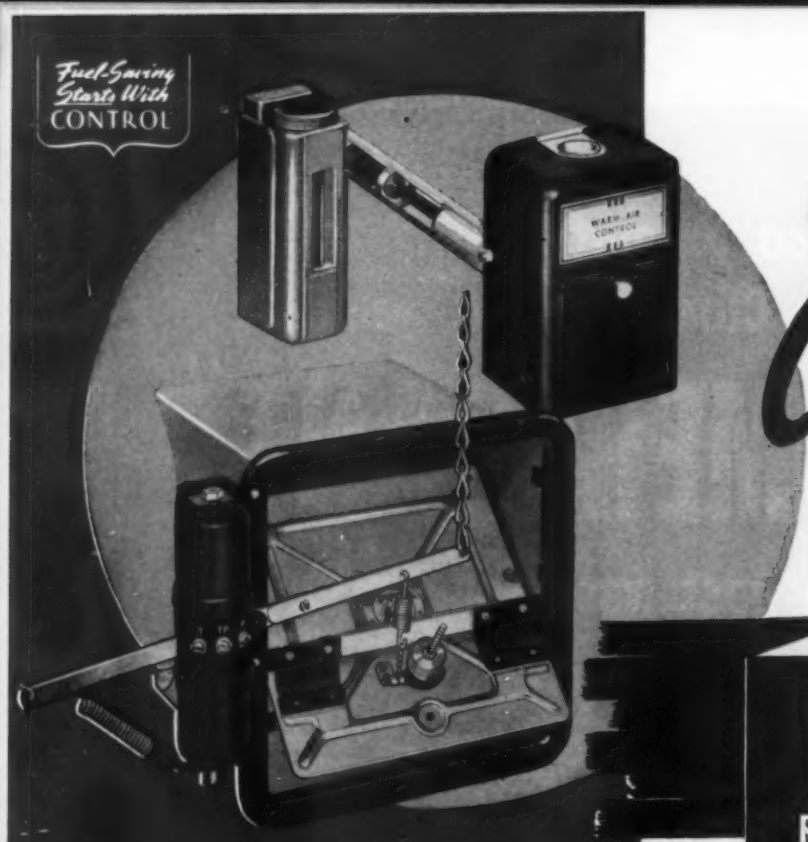
Member

D-50

Climatrol

REG. U. S. PAT. OFF.

BY MUELLER



NEW DIFFERENT OUTSTANDING *Combustion Control System*

Saves Up to One-Third in Fuel Bills by Automatically Regulating BOTH Room Temperature and Fuel Burning

Now for the first time you can sell an automatic contro system for hand-fired heating that's really **complete** Not an ordinary 3-piece damper operator set — the sensa tional new Combustion Control System includes a Dra Regulator for complete automatic control of combustion a well as temperature.

WHY COMBUSTION CONTROL SYSTEMS BRING PROFITABLE SALES

When you sell the Combustion Control System you sav customers as much as one-third of their fuel bills. Yo give them new heating comfort 24 hours a day. You giv them new convenience with fewer trips to the basemen Banks last longer, firing frequency is reduced and clinke are minimized.

Now is the time to start selling. Every hand-fired furnac or boiler needs a Combustion Control System — you mak a generous profit plus installation charge on every sal Ask your heating equipment manufacturer for his comple merchandising plan to help you get this profitable busines

HOW TO GET THIS SALES FEATURE ON NEW HEATING EQUIPMENT

Also ask your manufacturer to equip his products wi Combustion Control Systems at the factory so you can hav the tremendous sales advantage of offering automatic co trols on the new furnaces and boilers you sell.

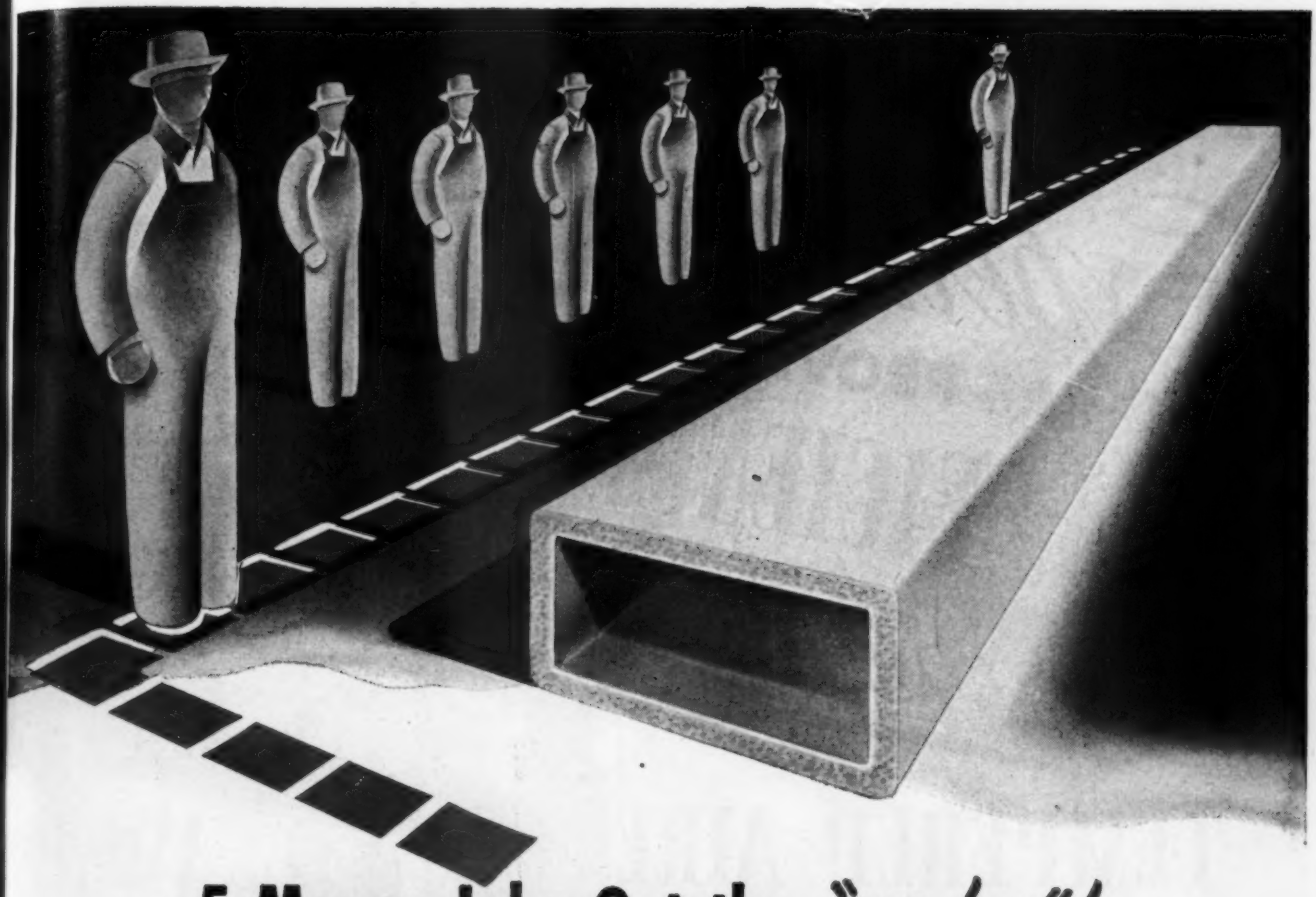
HERE ARE EXCLUSIVE FEATURES THAT MAKE PROFITABLE SALES

- Damper Operator and exclusive Draft Regulator are a self-contained unit mounted directly on heating plant for easier, neater installation, shorter chain runs.
- Exclusive Magic Dial Thermostat has comfort range adjustment to suit heating preference of householder.
- Precision Limit Control protects against overheating of furnace.
- "Fail-safe" design checks fire in case of power failure.
- Same standard high quality controls used on fine stokers and oil burners — approved by Underwriters Laboratories.

Perfex
CORPORATION

500 W. OKLAHOMA AVENUE • MILWAUKEE 7, WISCONSIN

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK NAMES OF LEADING PRODUCERS OF HEATING EQUIPME



5 Messy Jobs Get the "go by"!

BLOW HOT! BLOW COLD! Careyduct will deliver the load with minimum change in temperature.

40% TO 50% QUIETER. Careyduct carries higher velocities . . . means greater capacity.

Carey duct—the *prefabricated* asbestos duct—is perfect for existing buildings, as well as new. It eliminates 5 out of 7 major installation operations . . . the 5 most costly in time and labor—and also the messiest.

Careyduct checks out: (1) cutting plaster for furring; (2) insulating; (3) acoustical treatment; (4) putting up framework; (5) installing lath and plaster. Your jobs aren't held up waiting for other crafts.

You'll "make out" better on air conditioning jobs in both old and new buildings by using Careyduct—the *prefabricated*, acoustical, insulated, fireproof, rust-proof duct.

For more information consult your nearest Carey Branch or write—

INSTALLED FASTER than ordinary duct . . . by any qualified sheet metal worker.

GOOD LOOKING. No unsightly joints. Takes any finish or looks good unfinished.

THE PHILIP CAREY MANUFACTURING CO.
LOCKLAND, CINCINNATI 15, OHIO

Carey

IN CANADA: THE PHILIP CAREY CO., LTD.
OFFICE AND FACTORY: LENNOXVILLE, P. Q.

Careyduct • Industrial Insulations • Rock Wool Insulation • Asbestos Shingles and Siding • Asphalt Shingles and Roofings
Built-up Roofing • Roof Coatings and Cements • Waterproofing Materials • Asphalt Tile Flooring • Pipeline Felt
Expansion Joint • Asbestos Wallboard and Sheathing • Corrugated Asbestos Roofing and Siding • Miami-Carey Bathroom Cabinets and Accessories

RATIONING

Experience HAS PROVEN the EFFICIENCY OF THE Gar Wood TEMPERED AIRE

IN RICHMOND HOMES

The homes illustrated are equipped with Gar Wood heating systems installed by N. W. Martin & Bros. The data compiled in connection with the rationing program has revealed their sensational economy.

FUEL CONSUMPTION FAR BELOW AVERAGE

Average prewar Richmond Area Gallon per square foot .97

Average Gar Wood Equipped Gallon per square foot .86

These are average figures, not the outstanding performance of one unusual installation. In all of the homes illustrated the domestic hot water also was heated with oil and this oil is included in the average figure of .86 gallons per sq. ft. of floor area.

The amazing oil economy of Gar Wood units is built in at the factory. It arrives in package form for the dealer to install.

Gar Wood HEATING DIVISION
GAR WOOD INDUSTRIES, INC
DETROIT 11, MICHIGAN

INVESTIGATE THE GAR WOOD FRANCHISE FOR YOUR COMMUNITY

SMOOTH, UNIFORM METAL TRANSFER WITH Flexarc SW electrodes

The SW electrode is the electrode that operators "discovered". It was developed by Westinghouse and is still the leader for light-gauge work with low-capacity, a-c welding machines. But its use has gone far beyond this because of the excellent results obtained with a-c or d-c machines on general-purpose work.

With either type of current, beads are clean, smooth and flat. Uniform metal transfer makes the SW electrode outstanding for production of sound welds in both overhead and vertical positions, and with special treatment this electrode is unexcelled for underwater cutting and welding. It covers the general field of mild steel welding and you can expect excellent results when used with any of the following metals: low and medium-carbon steel; low alloy, high-strength steel; copper-bearing steel; wrought iron; low and medium-carbon cast steel.

For more information about this quality electrode send for folder DD-26-644. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-21337

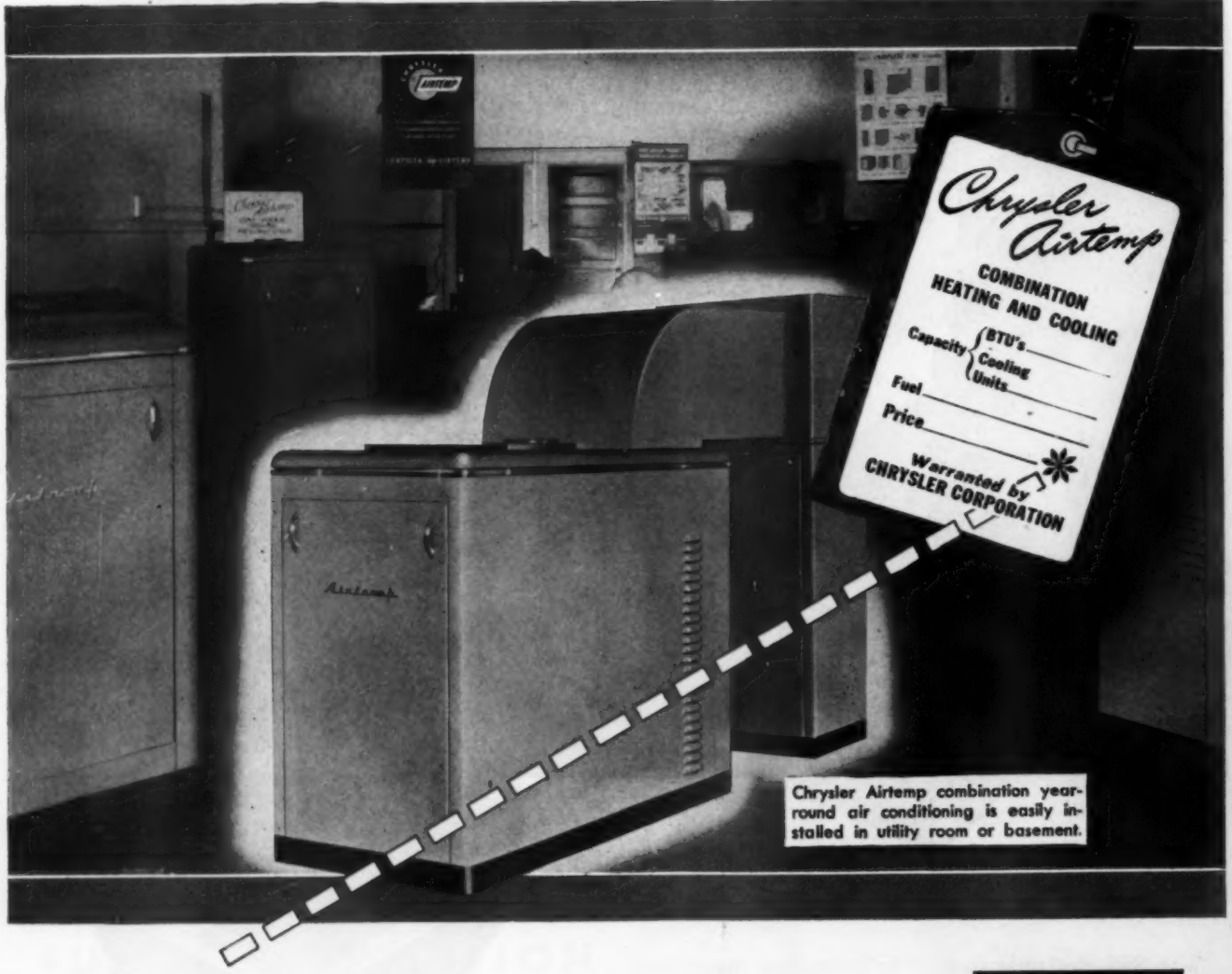
ONE OF THE WESTINGHOUSE "BIG 5"
Meets AWS and ASTM Specs. E-6013-12

- A-c or d-c arc easy to strike and maintain
- Low spatter loss
- Easy slag removal
- Smooth, closely rippled weld beads
- Minimum "burn-through" on thin sections
- Easy to handle in vertical and overhead positions
- Free from slag interference, when welding vertically down

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

FLEXARC SW ELECTRODES

CHRYSLER AIRTEMP

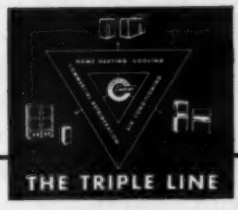


Chrysler Airtemp combination year-round air conditioning is easily installed in utility room or basement.

Priced to Meet Competition

The "Packaged" Chrysler Airtemp Combination Heating and Cooling System is typical of Airtemp products. Compact and efficient, it is bringing a new realization of year-round comfort in hundreds of homes of even modest budgets. And prices are competitive on the complete line of Chrysler Airtemp products. Designed for steam, hot water and warm air, this equipment uses all types of fuel. A wide range of cooling and refrigeration products, including the famous "Packaged" Air Conditioner pioneered by Chrysler Airtemp, meet practically every need in the temperature-humidity control field. With modern mass production methods, proven principles and a background of engineering leadership, Chrysler Airtemp is in a position to offer the American public a new standard of values in heating, cooling and refrigeration.

The Chrysler Airtemp Triple Line . . . Heating, Cooling, and Commercial Refrigeration . . . offers dealers an unusual opportunity for 12 months' profitable operation. Dealer agreements will be available for any single Chrysler Airtemp Line . . . any two lines . . . or for all three lines. • Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



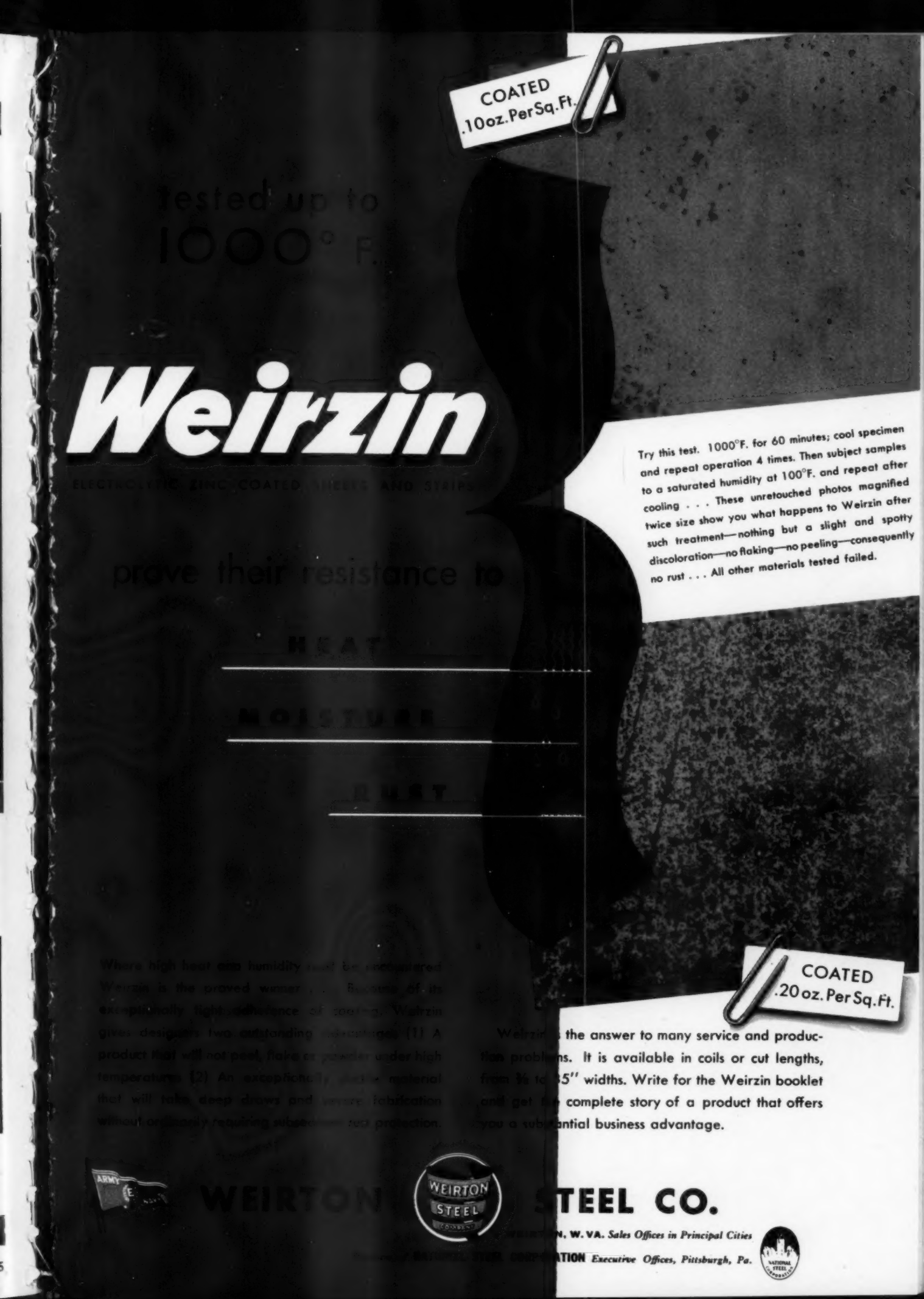
THE 4 FUNDAMENTALS of CHRYSLER AIRTEMP DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service

I.C.I.

Buy More War Bonds! You'll enjoy "The Music of Morton Gould," Thursdays, CBS., 9 p. m., E. W. T.

HEATING • COOLING • REFRIGERATION



Try this test. 1000°F. for 60 minutes; cool specimen and repeat operation 4 times. Then subject samples to a saturated humidity at 100°F. and repeat after cooling . . . These unretouched photos magnified twice size show you what happens to Weirzin after such treatment—nothing but a slight and spotty discoloration—no flaking—no peeling—consequently no rust . . . All other materials tested failed.

Where high heat and humidity must be encountered Weirzin is the proved answer . . . Because of its exceptionally tight adherence of coating, Weirzin gives designers two outstanding advantages: (1) A product that will not peel, flake or powder under high temperatures (2) An exceptionally ductile material that will take deep draws and severe fabrication without ordinarily resulting coating rupture nor protection.

Weirzin is the answer to many service and production problems. It is available in coils or cut lengths, from ⅜ to 35" widths. Write for the Weirzin booklet and get the complete story of a product that offers you a substantial business advantage.

ARMY E

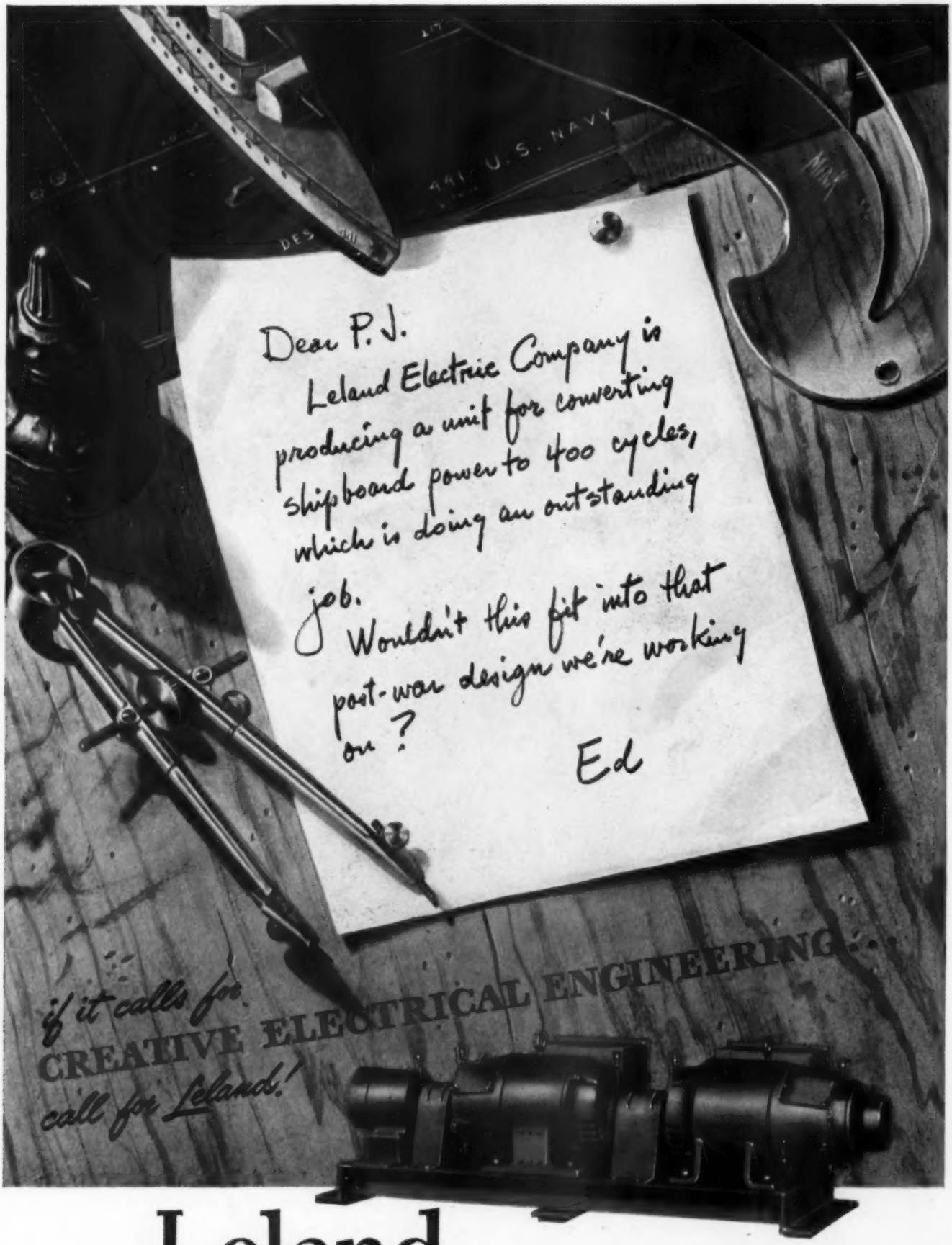
WEIRTON STEEL COMPANY

WEIRTON STEEL CO.

WEIRTON, W. VA. *Sales Offices in Principal Cities*

NATIONAL STEEL CORPORATION *Executive Offices, Pittsburgh, Pa.*

NATIONAL STEEL CORPORATION


Dear P.J.
Leland Electric Company is producing a unit for converting shipboard power to 400 cycles, which is doing an outstanding job.
Wouldn't this fit into that post-war design we're working on?
Ed
if it calls for CREATIVE ELECTRICAL ENGINEERING...
call for Leland!

THE Leland ELECTRIC COMPANY

DAYTON, OHIO • IN CANADA, LELAND ELECTRIC CANADA, LTD.... GUELPH, ONTARIO

COMBUSTIONEER'S
28 YEARS OF STOKER SELLING KNOW-HOW AND KNOW-WHY PAY OFF FOR YOU TODAY

Combustioneer's Easy to Use Methods Equip Dealers for Profitable Streamlined Selling

Today, Combustioneer dealers are *completely* equipped with a vast reservoir of priceless sales data and information which Combustioneer has accumulated, and compiled into compact, usable form during 28 years of aggressive and pioneering leadership. Result—dealer's salesmen have at their fingertips the facts and figures which streamline their contacts and speed the sale of stokers to *all types* of prospects.

Let us tell you how *Task Force* mailings, *Selective* promotional plans, and *Pre-Tested Survey Presentations* are right in the groove of average dealers and their salesmen.

It makes no difference *what* kind of prospects you're out to sell—home owners, public and private buildings, business establishments or industrial plants—Combustioneer has a *specific* story of economical, automatic heating that begins with their boiler or power plant and reaches right into their pocketbook. And Combustioneer has the methods and materials *which make that story register* wherever it's told, in home, office or showroom.

Advertising and Promotional Helps That Make Combustioneer's Exclusive Features Easy to Sell

Combustioneer's precision built mechanism is fortified with exclusive patented features, including the famous Breathing Fuel Bed, Automatic Respirator, Safety Clutch and many others, which make it easy to sell with the help of Combustioneer's complete visual presentation materials. All this is supported by Combustioneer's continuous national advertising, effective localized advertising campaigns, sales-making literature and mat service, regular promotional plans, window and store display materials and comprehensive sales and service manuals.

Get Going NOW with Combustioneer

Right now Combustioneer Dealers are selling the dollar-and-labor-saving advantages of Combustioneer Automatic Heating. This very day they are getting orders for immediately available models which are *drastically reducing fuel costs,* increasing boiler output, and maintaining closely held temperatures which result in increased production and human efficiency.

THE STEEL PRODUCTS ENGINEERING CO.
1214 W. Columbia Street, Springfield, O.

WRITE TODAY FOR COMPLETE DETAILS ABOUT COMBUSTIONEER'S IMMEDIATE SALES OPPORTUNITIES

Combustioneer

AUTOMATIC COAL STOKER

HOME AND COMMERCIAL MODELS FOR EVERY NEED

In addition to Imperial and Bin Feed Models which serve homes and small apartments up to 14 rooms, Combustioneer's complete line of Commercial Models range in coal burning capacity from 25 to 1250 lbs. per hour.

★ KEEP ON BUYING WAR BONDS

MILCOR

. . . again (soon, we hope) — when an adequate supply of materials and manpower permits — your dependable supplier of everything you need for *quick, easy installation . . . satisfactory results . . . bigger profits* — on every heating and air conditioning job:

★ **Furnace Pipe**

★ **Gravity and Forced Air Fittings**

★ **Stove Pipe and Elbows**

Remember Milcor!

MILCOR STEEL COMPANY

MILWAUKEE 4, WISCONSIN

Baltimore 24, Maryland • Chicago 9, Illinois • Kansas City 8, Missouri
Los Angeles 44, California • Rochester 9, New York

. . . equipped to provide additional service through

THE J.M.&L.A.

OSBORN CO.

CLEVELAND 14, OHIO
DETROIT 2 • BUFFALO 11 • CINCINNATI 25

. . . a Division of Milcor Steel Company

G-92A

YOU'LL FIND PROFIT IN A PACKAGE . . . .

Packaged Heat IS BETTER TOO!

Pumping 'lasses from the barrel is in the "dark ages" compared with modern package merchandising . . . yet no more outdated than the way you have had to handle heating equipment.

Why? — Because Penn has Packaged Heat!

How?—An exclusive methods patent enables us to send you a completely factory prefabricated gas or oil-fired unit . . . an honest-to-john *package* you receive in one crate, ready to fire.

Forced warm air, boiler-burner or split system . . . each comes to you with wiring, burner, controls, hearth and every working part self-contained . . . designed and selected to team with the whole. Every unit of Packaged Heat is Penn built, balanced and fire tested . . . your only job is to hook it up to the proper lines.

Design benefits and *Dealer* benefits are also unified; you *get* lower stack temperatures, peak burner efficiency, speedy recovery, noiseless operation . . . you *save* up to 90% usual installation time, labor and engineering headaches.

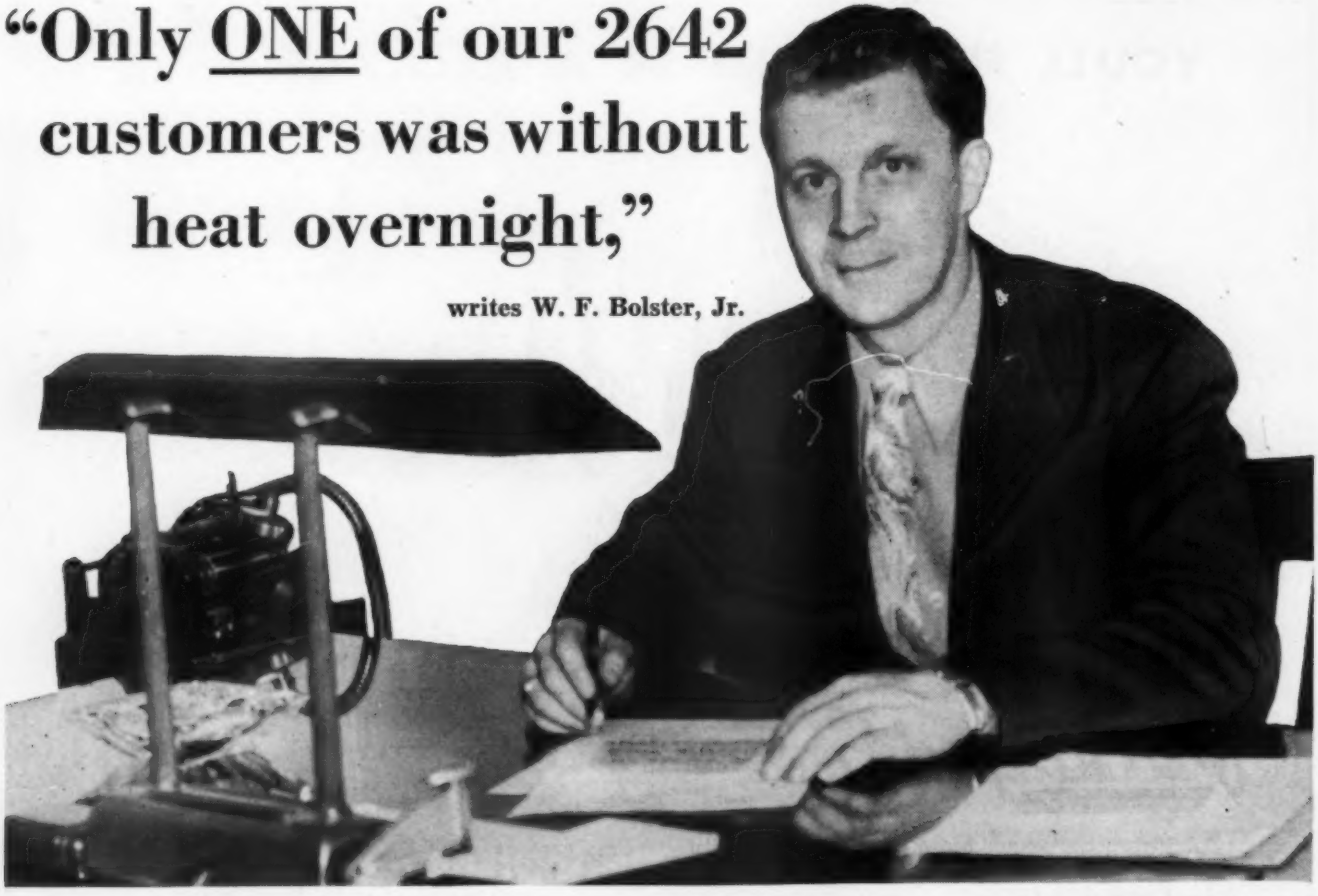
Some franchises are still open so write Penn today for complete details—unless you are content with pumping it out of a barrel.

PENN BOILER and BURNER MANUFACTURING CORP.

LANCASTER, PENNSYLVANIA

"Only ONE of our 2642 customers was without heat overnight,"

writes W. F. Bolster, Jr.



W. F. Bolster, Jr., is head of Bolster Brothers, Inc., East Orange, New Jersey. This dealer, in 6 years, has built an exceptionally profitable business with Timken Products. How? Read his letter.

"Here is a record we're mighty proud of," writes Mr. Bolster,"—during the entire heating season just past, only one of our 2642 Timken customers was without heat overnight thanks to the trouble-free operation of Timken Silent Automatic Oil Burners.

"In spite of the shortage of help, severe weather and transportation difficulties, your quality-built burners enabled us to give such service that only one of our customers suffered the inconvenience of being without heat for more than a few hours—day or night—Sundays and holidays included. This is a record you can well be proud of.

"We want you to know how much we appreciate the aid you have given us with sales, in business management, in hiring and training salesmen, in schooling our mechanics to install and service properly, and in backing up our efforts with your national magazine, newspaper, and direct mail advertising.

"Our users are writing our postwar sales story NOW! They are telling us how wonderful it is to own a Timken . . . why a burner with only one moving part requires less service . . . how quiet their burners are . . . how much warmer they have been with a Timken that uses much less fuel than their neighbors use with ordinary oil burners.

"Timken Dealers will sure be in excellent shape to increase their business and profits when wartime restrictions permit you to lift the lid on the new line of Timken Silent Automatic Oilfurnaces, Oilboilers, Conversion Burners and Water Heaters."

★ ★ ★

Will you be in equally good shape to build a substantial, permanent business when the lid is lifted? Will you have the backing and cooperation of an organization like Timken behind you? Write us *NOW* and arrange an interview.

TIMKEN

Silent Automatic

Quality Home Appliances for Comfort, Convenience and Economy • 20 Years of Faithful Service to American Homes

Division of THE TIMKEN-DETROIT AXLE CO.
DETROIT 32, MICHIGAN

Your postwar humidifier valve won't dribble or plug up!

—NOT IF IT'S THE NEW

McDONNELL *Snap Action* FLOAT VALVE

WE won't attempt to prophesy just when you will begin to install warm air furnaces for J.Q. Public. We can assure you, however, that when you do begin to install them, you won't have to put up with dribbling, half-hearted humidifier water valves.

This assumes, of course, that you will use the new McDonnell Snap Action Float Valve. And when you consider its development and recent record, we feel sure that you *will* insist upon it for every furnace.

This valve is a complete innovation. Conventional humidifier valves slowly crack open as the float drops and merely seep or dribble water into the pan. Such action fails to flush out the valve orifice, with the result that the valve is too often plugged up with lime or dirt. The McDonnell snap action eliminates this fault. Whenever the float calls for water it snaps wide open, flushing away dirt, scale and lime, keeping the valve in good operating condition. It was a far better valve from the start and recently it has been brought to a still higher stage of perfection.

During the war this has been recognized by highest engineering authorities. Thousands of these valves in their present highly developed form have been used to control water level in special equipment used by the Army and Navy—equipment for which the designer sought the most dependable valve available.

Yes, the valve for your postwar installations has been perfected fully and proved *during* the war. Of course it is only available now for needs carrying high priority ratings.

McDONNELL & MILLER
1318 Wrigley Building, Chicago 11, Illinois

Doing One Thing Well REG. U. S. PAT. OFF.

GREAT-GRANDPA Never Expected To Really Heat THIS CHATEAU

But

GREAT-GRANDSON Wants to Be Sure of Heating *This One*

When great-grandpa built this subdivided union station, hung it full of fret-saw gingerbread, and called it home, he never expected to really heat it. He knew that the "island system" was about the best he could do—create little islands of heat about the house in which the family could huddle—let the teeth chattering drafts rage unchecked elsewhere. Not much of the house could be made comfortable, or used in winter. Great-grandpa substituted grandeur for comfort.

But great-grandson isn't going to have a house like an arena. He is going to have a small, or medium size house—big enough for comfort—but with no delusions of grandeur or efforts at impressiveness.

Great-grandson—millions of him—will want to live "all over the house", will want all parts comfortable in winter. He'll want heating devices that are sure, automatic, trouble-free and clean.

What better way to give it to him—when he marches home and begins building his home and his family—than with oil heating equipment controlled by "DL" Float Valves. They do the job economically—they're automatic—clean—and trouble free.

And—a lot of these great-grandsons know all about them—know how dependable "DL" Float Valves are—for "DL" Float Valves are giving heating comfort to soldiers throughout the world—helping provide better field ranges, water heaters, tent heaters—without telltale smoke to draw enemy fire.

Specify

Specify "DL" Float Valve Control on space heaters, water heaters, ranges, etc. They seldom need servicing and it's a simple job when they do. Rugged construction and automatic fuel flow compensation assure reliability.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT 8, MICHIGAN
Division of AMERICAN Radiator and "Standard" Sanitary Corporation

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators.

STOKOL

The STOKOL Policy

IT WAS NO ACCIDENT that Stokol achieved a top place in the stoker field. Stokol founded their business on giving the American public the best stoker money can buy. The next step was to build a sales organization which would afford dealers and salesmen an opportunity to make a fair profit. Then, Stokol supported these dealers with aggressive advertising to help them sell the product. More than 140,000 satisfied owners testify to the success of this policy.

Now, Stokol is making an even stronger bid for the huge potential stoker market. With the widest line—the greatest variety of models and range of sizes; with stokers designed for all solid fuels, from lignite of the northwest to anthracite of the east, Stokol is in a position to supply every stoker requirement. Backed by an even more aggressive advertising program—both national and local—and an enviable reputation in the industry, Stokol offers dealers a very sound opportunity for greater profits. Write today for the details. Stokol Stoker Company, Inc., Indianapolis 7, Indiana.

Tear Out This Coupon and Mail Today

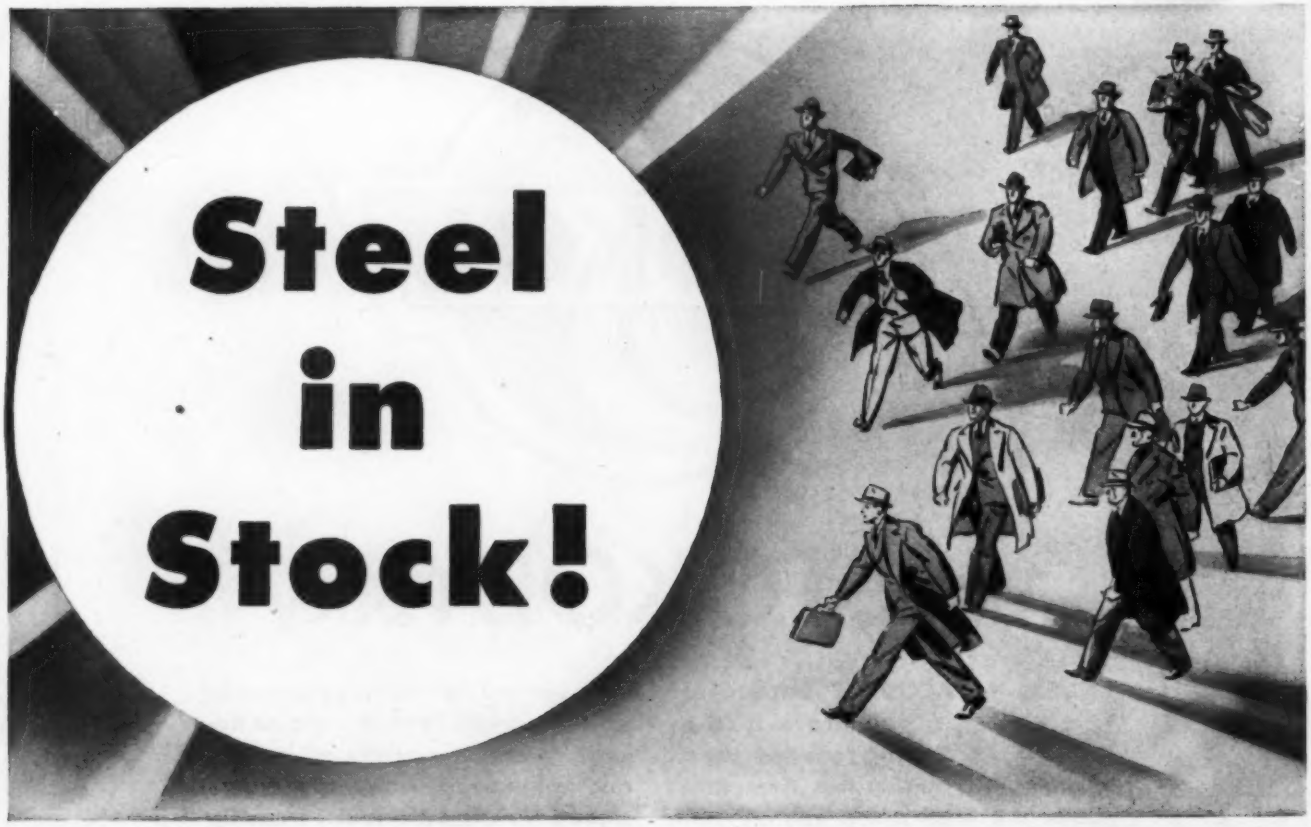
STOKOL STOKER CO., INC.
1145 E. 22ND ST., INDIANAPOLIS 7, IND.

Gentlemen: Send details of Stokol profit possibilities for me as a dealer.

NAME_____

ADDRESS_____

CITY_____ STATE_____



No!—buyers don't run to the 11 Ryerson Steel-Service Plants to buy steel, as they do to a cigarette counter when the "in stock" sign is out . . . but we sometimes have almost as much difficulty keeping up with demand. Every week thousands of orders speed steel from Ryerson stocks to war plants and essential industries throughout the country.

Why? . . . The reasons are simple and basic. Ryerson plants stock more than 10,000 kinds, shapes and sizes of steel. . . . Service is personal, intelligent and helpful. . . . Equipment and "know-how" are at hand to cut and otherwise prepare steel the way you want it. . . . Deliveries are prompt. But most important is Ryerson dependability, demonstrated by 102 years of steel service, and the determination to deliver to you, if humanly possible, the steel you want when you want it.

If you do not have a copy of the latest Ryerson Stock List, call or write your nearest Ryerson plant today. You'll realize what we mean by 10,000 kinds, shapes and sizes of steel when you use this complete guide to the nation's largest steel stocks.

JOSEPH T. RYERSON & SON, INC., Steel-Service Plants: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

RYERSON

BARS · SHAPES · PLATES · SHEETS · TUBING · STRUCTURALS · CARBON AND ALLOY STEEL · TOOL STEEL · ALLEGHENY STAINLESS

The Unwinding Process Begins

On news pages following it is forcefully apparent that our industry is moving into the transition period—we are beginning to unwind the gigantic tangle of regulation which, since Pearl Harbor, has guided every move.

The detailed reports presented piecemeal in the summaries of the news items can probably be stated thus—orders are being revoked, permitting manufacturers to scramble for materials, but for the next two or three months there will not be any flood of products and materials for contractors.

Sheet and plate which contractors will use as such and which manufacturers will process into furnaces, roof drainage and a hundred items are not plentiful. As Arnold Kruckman explains in this month's Washington Letter, we can believe there will be plenty of sheet and plate if we choose to believe some Washington agencies, but those agencies closest to our industry are not so optimistic.

It should be kept in mind that the mere revocation of a controlling order is no guarantee of a flood of products. Take furnaces as an example. Right now some steel furnace manufacturers have steel salesmen begging them to place orders for the third and fourth quarter, but there is no guarantee of delivery. Further, a steel furnace requires some cast iron parts and foundry castings continue to be a very tight problem.

Washington lays much emphasis on the "free steel" created by "open ending" mill schedules. But a little thought shows that the approximate 500,000 tons of steel thus freed is only a drop in the bucket. If automobiles, refrigerators, washing machines and similar big production items really enter the market for steel, this 500,000 tons of "free steel" will disappear over night.

Until further notice, Controlled Materials Plan continues in force and materials for essential civilian goods (this included all our products) will be allocated for the third quarter just as they have been for the past two years. Until there is a big drop in war items CMP won't have much more material to allocate to civilian goods than has been available in the last three or four quarters.

And, lastly, almost nothing has changed in the labor situation. Many, perhaps most of our manufacturers, are still heavily engaged in war production and are located in areas where manpower has been scarce for many months. WMC and USES have released some reports showing that manpower should soon be plentiful, but again as Arnold Kruckman points out this month, the manpower picture grows more confused rather than less confused. Until manufacturers stop producing for war, and get much more labor, there is not much chance for a big volume of civilian goods.

This shortage of manpower is likewise acute for dealers and contractors. We can't use just any Tom, Dick or Harry—our need is for men who know something about furnaces and how to lay out and fabricate and install sheet metal work. The best ship yard riveter or welder or assembler or the best airplane sheet metal man isn't worth a hoot to our industry unless he previously worked at our trade or unless we are willing to spend weeks or months to train him. The contractor's hope lies in getting enough skilled mechanics to lead a crew of willing but unskilled laborers so work can be wrestled in somehow. This will take time even though furnaces and sheets are stacked up outside the contractor's shop.

This adds up to about this—we've reached the place where we can hope to see the end of the red tape, regulation, control which has hog tied us so long; it begins to look as though American industry will be turned loose to pursue a course of individual incentive and freedom; from now on each month should bring some improvement in the conditions under which we operate.

But for the present, these are only anticipations. Unless the war ends unexpectedly, this industry will reach next heating season far behind in repair, maintenance, replacement work and completely adrift on new construction. The thought for the month, then, may be—keep calm; keep anticipations on the ground; don't believe all you read or hear; don't get upset if developments contradict themselves—but plan for the new day.

Arnold Kruckman's

Washington Letter

JULY 1 Won't Bring the Millennium

HERE is the ideal picture of what is supposed to happen after July 1. Please bear in mind the ideal picture is given first; later, in this letter, there will be the picture as we really see it here in Washington in June.

During July and August it is supposed there will be stupendous military cutbacks. Cutbacks start with the assumption that current steel production is supposed to be based on a concluding 60 day schedule after the notification. With July 1 as the springboard, steel plate is supposed to become available in September, the latter part of the third quarter, and is supposed to be in more bountiful supply during the fourth quarter, October, November and December. Thereafter it is supposed it will be free. This optimism applies to all plate, light and heavy. Plate is defined in the WPB Steel Division as everything 48 inches wide by 3/16 inch thick and heavier. Everything under that gauge, no matter how rolled, is classified as sheet. This means, of course, that the 8, 10 and 12-gauge steel used in your industry will not be available immediately.

Preference to Small Producers?

If you produce goods which you sell at a volume *not exceeding* $50,000 per quarter, or $200,000 per annum, you are supposed to be entitled to special preferences. The new regulation, PR-27, is designed to give smaller businesses the right to secure steel before others who will be entitled to unrated supplies. The regulation is supposed to put the brakes on the mounting demands of great production combinations, such as the automobile industry and those eager to make enormous quantities of goods for the utilities.

The Chairman of the WPB Requirements Committee, Lincoln Gordon, has stated: "It is *hoped* the supply of carbon and alloy steel for the quarter will continue at about the same levels as in the two previous quarters, roughly, 14,309,000 tons carbon and 1,839,000 tons of alloy steel. Third quarter allotments for domestic non-military end uses are 350,000 tons greater than similar allocations made for the first quarter of 1945, the last full quarter of the two front war. For most domestic programs this does not represent any increase in steel over first quarter levels. It does, however, include increases where essentiality was clear. These include farm machinery, oil country goods, buses, trucks, railway passenger cars, construction components such as plumbing and *heating equipment*, and builders' hardware.

In the case of building components, the increase in allotments of steel to programs is designed to provide a ready supply of components that will assure increased employment in the construction industry in the near future when structural steel and lumber are more plentiful.

"In addition to steel allotted to essential production, there will be approximately 500,000 tons 'free' steel available to industry during the third quarter—that is steel that can be purchased on the open market without priorities. It is also expected the cutbacks will make available excess and surplus steel in substantial quantity, which will supplement the half million tons of third-quarter 'free' steel. This 'free' steel may be used for the production of goods that WPB no longer restricts by limitation orders. WPB will, however, continue to enforce its inventory controls. These controls prohibit the purchase of 'free' steel in advance of actual production need."

Bear in mind in late April WPB people stoutly estimated the "free" and cutback steel after July 1 would total between 2,500,000 and 3,000,000 tons. Mr. Gordon's estimate of 500,000 "free" steel, and an unspecified volume of cutback steel is now generally estimated in WPB at 1,500,000 tons. The figures may put you in the state of mind of the Ancient Mariner who saw water, water everywhere, but not a drop to drink, and make you impatient because such figures have only remote bearing on your immediately urgent problem, but they are highly interesting as an illustration of the manner in which the most optimistic official ideal pictures change.

Reconversion Officer Named

Manufacturers of furnaces and other heating equipment have been officially placed in the group of 71 industries which the WPB regards as immediately essential. The industry is one of the 400 to benefit by the special facilities to be supplied by the Period One Committee of WPB. The warm air furnace industry has been provided with its own special reconversion officer and Counselor, Morgan N. Johnston, experienced in the needs of the industry by reason of his service in WPB Plumbing and Heating Division practically since it came into existence. Mr. Johnston thinks straight and is sincere, and he will tell you the facts, whatever they may be and however unpalatable they may be.

This reporter mentions Mr. Johnston with emphasis because it seems certain there are some critical days ahead when a feller will need a friend, and in your

case you may find Johnston that friend here in Washington. You will undoubtedly find Mr. Johnston a part of the real picture, not the ideal dream. Whether or not you get steel, either plate or sheet, depends chiefly on the supply that will be released by those theoretical cutbacks.

The Cutback Jitters

We have been discussing cutbacks for months. There are thousands in the Government agencies right here in Washington, as well as many, many business people scattered all over the country who have the cutback jitters. The period Mr. Krug has intimated we are to enter on July 1 has been pictured to many people as *the* slump. From WPB itself we have heard that during July and August as many as from 4,000,000 to 6,000,000 people may be thrown out of employment. To give the picture startling quality they tell us there are already thousands in various parts of the country on Federal and State relief payment roll. They do not tell us that these people have earned their title to what they are drawing because they have been taxed for it, and that most of them probably have some form of reserve that will support them for some time.

This picture of joblessness has a relation to your supply problem and the facts should interest you. *If* the cutbacks materialize in all the volume vaguely threatened, there is no doubt from 3,000,000 to 4,000,000 workers will leave war jobs. To paraphrase Al Smith, let's look at the figures. Over-all war and civilian industries there are now employed in the United States less than 54,000,000 persons. Of this number, less than 47,000,000 are working on railroads, in retail stores, in factories, and in the various production and service industries which *must* go on, war or no war. Roughly, it is estimated the war plants and war distribution activities engage the time of between 6,000,000 and 7,000,000 people. Those actually wage-earners range somewhere between 5,000,000 and 6,000,000. Against this potential of possible unemployed during July, August, September, *if* such unemployment really should occur, there are growing cries for more workers in the textile industries, in the lumber industry, in the service industries, and in many other war industries, as well as civilian non-war industries. It has been estimated by the most cautious people here in Washington that 2,000,000 can find jobs immediately as soon as the USES will turn them loose, and that there are still more jobs if the unemployed will move from one place to another.

Where ex-War Workers Go

The question is—will those released from war jobs take other jobs immediately or in the future? The Government people used a situation in the Northwest, across the Mississippi, to find out. Over 1,800 persons were released. A careful check revealed that 100 took other jobs. There were an amazing number of jobs to be had for the other 1,700. But it was found the majority of them either went to the country to visit Aunt Emma for two or three months, or they made up their minds to wait a while and see what might offer that was better. The greater part of the 1,700 turned out to be women, and most of the women felt they had done their patriotic duty and that they would hereafter stay home. The same conclusion apparently was reached by most of the older people.

Generally speaking, the industrialists in an upper New York State area had the same experience. A considerable number of workers were released. Most of them had been driving 20 miles or so daily to come to work. But when the work proffered was not war work they apparently did not think the profit was sufficient to spend the time daily in driving back and forth. They either quit work entirely or went back to less hectic and less well-paying jobs in their own home community or they took an indefinite vacation. In other words, there was decidedly not an unemployment problem.

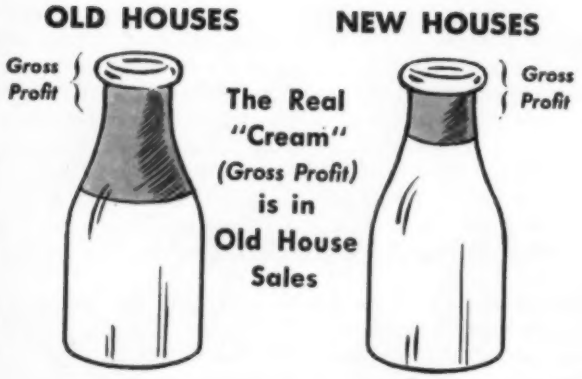
The problem still is where and how the non-war industries and services may find help. There is bound to be spotty unemployment as the cutbacks develop. Towns which have mushroomed as war-plant centers will feel it. But what most philosophers about this first supposed unemployment period seem to forget is the stupendous money reserve most of the workers have accumulated, with little to spend it upon in the past and in the immediate future. Those who really know point out there is in liquid daily circulation $26,000,000,000; individuals, mostly in small lots, hold $95,000,000,000 in Government bonds, and largely in smaller credits the banks have in savings and checking accounts $140,000,000,000. This total of $261,000,000,000, practically ready cash, an almost inconceivable sum, is bubbling and boiling to be spent. The real problem is to devise a way by which it may be spent for badly needed furnaces and appliances and newly equipped homes, as well as the luxuries which today are more easily available than the badly dried-up supplies of necessities. It is obvious, if the unemployment potential develops even relatively along the pattern the gloom-spreaders wish us to believe, the people who are idle and reluctant to take jobs immediately will patronize the market supplied by the few industries which can produce. There still seems to be a sellers' market for a few lucky industries.

More Steel If—

The much discussed cutbacks clearly are the answer to your questions about steel and iron and other metals, as well as about other facilities. You have been told these cutbacks will come in vast totals in July and August. The releases issued by WPB appear to assure you the cutbacks are almost upon you. When you discuss cutbacks here with Government people, off the record, they invariably qualify whatever they say by the word IF. *If* the cutbacks come, *if* certain needs diminish, *if* this or that happens, you will get steel in the third quarter, or the fourth quarter, or early next year. And *if* the open-end system of CMP operates with the the new plan of priorities, we are told, for instance, the "CC" band may not be devoted to all industrial needs classified as essential but will be used very sparingly and only as a special rating for a highly essential end use. For example, some housing job which is extremely essential for civilian needs would be given the rare "CC" preference.

Mr. Krug has adopted the Nelsonian viewpoint that the War Production Board came into existence solely to facilitate and speed production for war. Neither he nor his immediate associates put it in words for the public, but they hold that civilian problems are not their babies. It is understandable, consequently, why they stress that "MM" and "CC" preferences apply solely to needs connected with the war. They use these controls to make sure that all war needs get everything they may need first. And these controls, simplified but in essence not very much different from the controls that have been in existence hitherto,

(*Continued on page* 125)



Organizing For Old House Sales

By Charles R. Bennett

TOO many furnace dealers, prior to the war, did not push large old house furnace business. Principally, these dealers went after new house furnace business which, as we know, is highly competitive and too often not very profitable.

The reasons we go after new house business are obvious; we see the need for a furnace every time we see a new house being constructed; it takes less effort to quote on new house furnace business; it is volume business; it is good advertising when we can put up our sign on the lawn or on the house. In other words, it is following the lines of least resistance.

If new house business can be obtained at the right margin, it is good business, or if it can be obtained at a fair margin and be used as fill-in to keep our mechanics busy, it is definitely worth while. But if we sell only new house business or even a large percentage at a competitive price, giving us a low gross profit, we are likely to end the year with a healthy *loss.*

As we know, the cardinal principle of every business is to have an *adequate gross profit.* It is difficult to find one heating contractor who made money on exclusively new house sales during the last twenty years if he continued this practice over a long period of time. A few have made money for a year or two, where a special condition of high demand and low supply existed in a community. But after a year or two, competition would creep in and the law of supply and demand would drive down prices on new house work to the point that there was no longer any money to be made.

Results by One Dtu

The real cream in the furnace business is in the old house market. A large furnace company, selling at one period in peace-time 50,000 furnaces a year, did 90 per cent of its business in the old house market through 500 factory-owned branch offices and only 10 per cent in the new house field. It insisted on its branches operating at an adequate gross profit. It soon became evident that this adequate gross profit could not be made from new house business, so the branch organization was forced to develop old house business. As a result, as high as 97 per cent of the branch offices made profits each year, with resulting profits to the furnace company manufacturer.

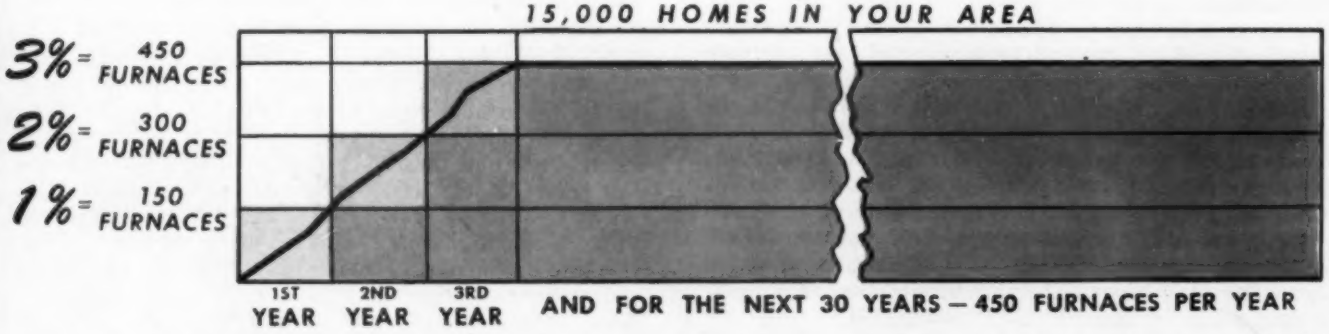
It is much more difficult to get furnace sales in old houses than in new houses. It means going out after the business instead of waiting for it to come in. A sales force must be organized to go after cleaning and repair business in order to develop furnace and other equipment sales.

How to Make a Sales Quota

We must set a "quota" for old house sales. As many as 3 per cent of the old houses in our territory can be set up as a quota each year. If the territory has 15,000 old houses in it, we can open our sales campaign with a goal set at 1 per cent of the houses (heated by stoves and central heating plants) per year. Gradually this quota of 1 per cent can be raised as we build up trade and develop good will in the old house field.

Another way to set a quota (if, in addition to heating, we want to sell package merchandise like stoves, ranges, heaters, deep freeze units, insulation, attic fans, refrigerators, cooling units, water heaters, water softeners, etc., to straighten out the yearly sales curve and make profits each month of the year) is to set a sales quota of $1.50 to $2.00 per year per person in your territory.

If you have, for example, 15,000 houses and 66,000 persons in your territory, your quota would be 150 furnace sales per year, or $100,000 to begin with if you sell appliances and heating. You, as the owner of the business, would have to set up a sales force of five heating plant salesmen to sell this volume in the old house field. You, as the owner, would strive to out-sell any one of these salesmen in the old house field if your salesmen are to click on their own. You


15,000 HOMES IN YOUR AREA
3% = 450 FURNACES
2% = 300 FURNACES
1% = 150 FURNACES
1ST YEAR
2ND YEAR
3RD YEAR
AND FOR THE NEXT 30 YEARS — 450 FURNACES PER YEAR

In planning old house sales—set a quota. Start with the number of houses in your area (say 15,000). Plan to sell 1% the first year; 2% the second year; 3% the third year and continue on this level.

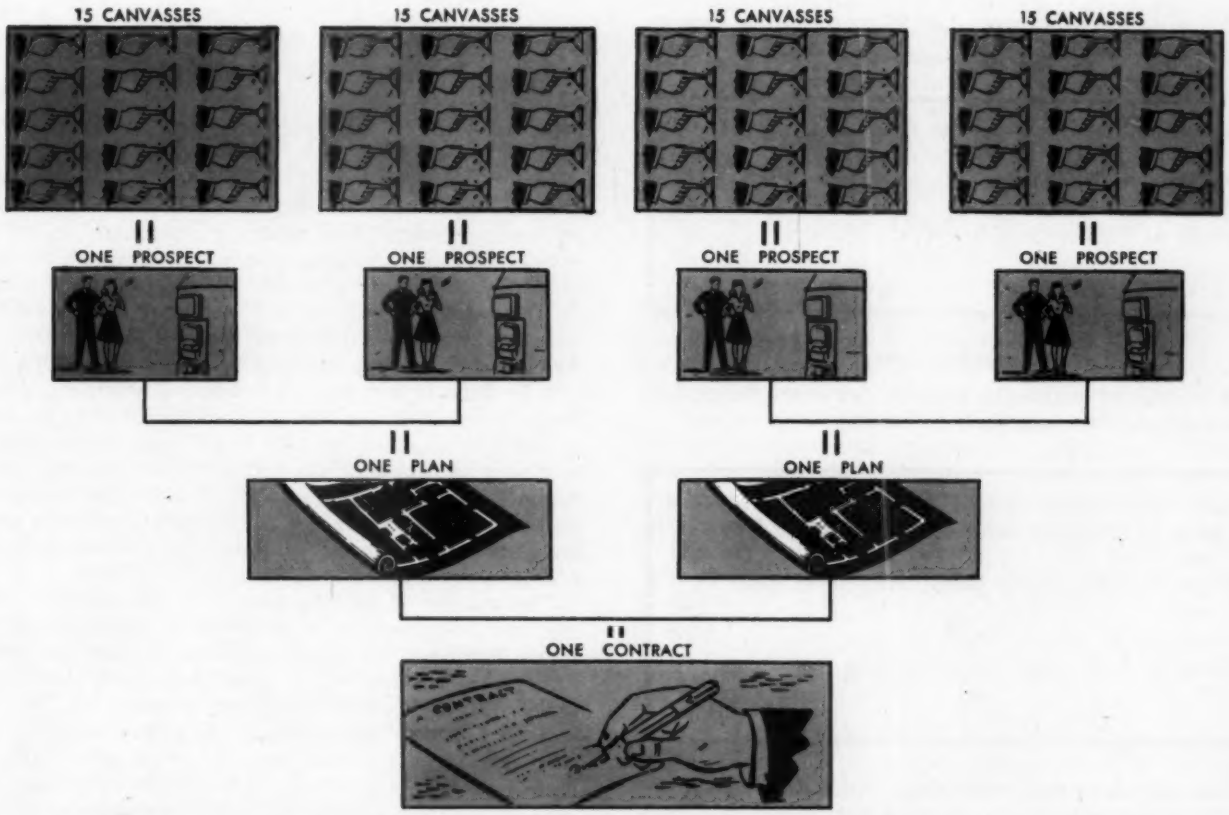
or one of your salesmen *must show* that old house sales can be made.

These five (two good salesmen are enough, but it will take five *average* men to get 150 furnace sales, as a rule) heating plant salesmen should be called heating engineers or district managers for sales psychology reasons. However, these titles should not apply in name only. These men should be given manuals and a set training course in the fundamentals of heating. Such a training course should extend over a period of weeks, months and years until the men really are heating engineers in practice as well as in name. Such salesmen should be able to draw a heating plan, figure heat losses and lay out an adequate heating system. They must know how to quote an installed price to the home owner based on a Bill of Material sheet, and *sell the job*, supervise installation of the job, supervise servicing the job, and collect the money, if necessary, when the job is done. Each heating engineer, so trained, stands on his own feet and requires little supervision.

These five heating engineers will either get their own prospects or have junior engineers (bird dogs) to get their prospects.

After this war, hundreds of thousands of home owners will be good prospects for furnaces, automatic heating and other products. A good prospect list, accumulated during the war, will be a gold mine. But such a list will be dead in a short time because 75 per cent of the sales made in normal times are sold within one month after the prospect is uncovered. You can see the need for new and more new prospects each month. It is a waste of sales effort to work on *old* prospects. Hence, in furnace selling the important thing to stress each day, each week and each month, is a *volume of new prospects*. It is a crime for experienced heating engineers to go day after day and night after night without having new prospects to whom to talk, demonstrate, sell and close.

Prospects can be procured by advertising in newspapers, over the radio and by direct mail. But the best proven method is to carry on a house-to-house canvass of home owners every morning from 9 a. m. to 12 noon. When prospects are not plentiful, canvassing must be done in the afternoon. During the late spring and summer months, the twilight hours, when home owners are out working on their houses, lawns and gardens, are most productive hours for prospects.



One large DTU manufacturer has found that it takes 15 canvasses to get one prospect; two prospects to present one heating plan; two heating plans submitted to make on sale. Above is a chart showing the work required to make one sale.

60 Canvasses Get One Sale

Over a period of years we have found that every *fifteen* houses canvassed will yield *one* prospect for a new furnace, oil burner, stoker or a package appliance.

Every *two* prospects will yield *one* plan of a house for a heating product.

Every *two* plans will produce, on an average, *one* sale of a major heating product.

This law of averages will go up and down with good and bad years of business, but prospects and sales will positively be in proportion to the number of houses visited.

The cleaning and repairing approach to the home owner leads to old house heating sales. The cleaning order or re-cement order price should be held down as low as possible without losing money on these small orders. A furnace when cleaned or a furnace when

taken down for re-cementing will reveal the need for repairs, new gravity and forced air, and automatic furnaces.

Pay a high commission on cleaning and re-cementing orders in order to keep a sales force interested and to have as many opportunities as possible for repair and heating product sales. Sell cleaning orders on the furnace, smoke pipe, and bottom of chimney, instead of the whole heating plant, including the pipes. If the customer wants pipes cleaned, charge a good price for taking them down and cleaning by hand, as a good job cannot be done on pipes by vacuum.

Cleaning Costs

For instance, at a price of $3.95, costs can be broken down as follows:

Sales commission at 25 per cent	$1.00
Cleaner operator at 35 per cent	1.30
Paint, asbestos paper, etc., at 10 per cent	.40
Overhead at 10 per cent	.40
Profit at 20 per cent	.85
	$3.95

Recement Costs

A re-cement order can be sold, for example, at $12 up to 24-inch size furnace as follows:

Sales commission at 33⅓ per cent	$ 4.00
Labor at 33⅓ per cent ($1.50 down, $2.50 up)	4.00
Cement, paper, wire, paint, etc., at 15 per cent	1.80
Overhead at 10 per cent	1.20
Profit at 9 per cent	1.00
	$12.00

You will note that very little profit is allowed for on the re-cementing job; this is due to the fact that this type of job will reveal the need for larger major repairs in one out of three cases. In view of this, it is well to keep the price near your cost. This is good business, since the customer will more readily buy your services if the price is low enough to be attractive. Once you have begun the job, it is comparatively simple to reveal the need for further repairs or a new major heating product.

The need for almost anything we buy must be revealed to us before we decide to buy. A dentist examines our teeth to reveal the need for dental work; a doctor examines us before prescribing proper treatment; the automobile mechanic takes down an engine to reveal the need for repairs or an entirely new automobile. Have you ever noticed how the mirrors in a tailor shop reveal the need for new clothes? In fact, merchants reveal the need for new products every day and we don't buy until we realize we need new shelter, new heating, new clothes, or hundreds of other things we buy in normal times. Therefore, we must reveal the need for repairs and new heating products by showing the home owners, through proper direction of a sales force, the condition of their home heating plants and appliances.

"Junior" Engineers Plan

If heating engineers get lax and will not canvass for prospects, you, as the owner of the business, must hire, train and direct a sales force of junior engineers to supply prospects for you and your heating engineers. (These junior engineers later become excellent heating engineers.) These men will sell cleaning and re-cement orders and package merchandise. They should be paid a commission of 3 per cent on sales made by heating engineers, where they have turned in the leads. Charge this 3 per cent to the heating engineer who sells the lead the junior engineer has developed through a cleaning or re-cement order. This can be done if you pay your heating engineer a good commission on the selling price of the heating product. A commission of 15 per cent is adequate if the heating engineer is working on straight commission, and a commission of 12 per cent if he is working on a drawing account. Pay junior and heating engineers regular commissions on cleaning orders, re-cement orders and package merchandise they sell and close.

The matter of *getting prospects* through the cleaning and re-cementing approaches is important in old house business. It must be stressed each and every day to your sales force, your mechanics, your office girls, your customers, coal men, friends, etc.

Sales contests to stimulate obtaining cleaning and re-cement orders can be used to great advantage. In fact, sales contests, after a sales force is trained and gets going, will imbue the entire personnel with enthusiasm. Training courses, after a while, leave a sales force cold. That is the time to revive their enthusiasm with the sales contest.

Selecting, training, directing, paying and stimulating a sales force to go after a volume of old house business will be discussed in greater detail in subsequent issues of this magaine. What we have hoped to accomplish with this article is to make us all old house minded, because that is the stable and profitable field for our industry.

Paid Vacations

WITH the approach of summer, employers should remember that wage and salary stabilization rules control employer policy on pay for vacations. Only if the employer follows the provisions of a vacation plan he actually was using prior to Oct. 3, 1942, or since approved, is it unnecessary to obtain approval.

In event employes do not get to take their vacations it is permissible to pay them, in addition to their actual earnings for time worked, the vacation pay which the employer would have been entitled to pay them without approval had the vacation been taken. Such vacation pay, however, must not exceed the employe's straight-time compensation.

In the remote event that an employer desires to discontinue a policy of paying for vacations, approval appears to be necessary inasmuch as such a move might be viewed as a decrease in wages.

Under the Wage-Hour Act, moreover, pay for vacation time to employes who forego their vacation rights as provided for in an established plan is not deemed to be compensation for hours worked. Accordingly, payment under such circumstances for vacation not taken does not affect the rate of pay to which such employes are entitled under the Act.

Interpretations, Amendments, Easements To Existing Orders

Orders Revoked

AS OF the first week in June, the following orders which affect our industry have been revoked.

Readers should remember that revocation of these orders does not affect the Controlled Materials Plan (CMP). CMP4-B is still in operation and allocations for materials, for the present, will be handled under this plan. The applications for materials for the third quarter will be processed and the cases mailed to producers about the first of June, according to the best information now available.

In all cases, even though the controlling order has been revoked, production is still limited by restrictions imposed on manufacture under regulations of the War Manpower Commission and by shortages of materials as indicated under CMP. Also, manufacturers located in critical labor areas must still get clearance for additional labor from WMC and USES.

Here are the orders revoked:

L-22 (Furnaces)
L-27 (Vending machines)
L-29 (Metal signs)
L-38 (Industrial and commercial refrigerating and air conditioning machinery and equipment)
L-42 (Low pressure boilers and plumbing supplies)
L-74 (Oil burners)
L-75 (Coal stokers)
L-77 (Metal windows)
L-78 (Fluorescent lighting fixtures)
L-107 (Extended surface heating equipment)
L-123 (General industrial machinery—see report)
L-173 (Oil and gas burning domestic space heaters)
L-182 (Commercial cooking and food plate warming equipment)
L-187 (Cast iron boilers)
L-199 (Plumbing and heating tanks)
L-216 (Universal portable electric tools)
M-9-c (Copper)
M-126 (Iron and steel building products)
M-293 (Boilers)
U-1 (Equipment needed by utilities)

◆

Permitted Sheet Orders

THE War Production Board on May 12 restricted the tonnage of carbon steel sheet and strip products that warehouses may order from steel-mill scheduled rollings.

Direction 1 to Order M-21 provides that steel warehouses, beginning with tonnage to be delivered in the third quarter of 1945, must limit their orders for any quarter for hot rolled carbon sheet and strip to 25 per cent of their purchases from mill scheduled rollings during the year 1944. Cold rolled strip purchases for any one quarter are limited to 30 per cent of 1944 purchases. This, in effect, holds warehouse purchases from mill scheduled rollings to 100 per cent of 1944 levels on hot rolled sheet and strip and 120 per cent on cold rolled.

Previously there were no restrictions on tonnages of specific steel products that warehouses *could order*, provided the *total deliveries* did not exceed those of a corresponding period of the previous year.

Warehouses have an alternative from the above restrictions in that they may order up to 60 tons of combined hot rolled and cold rolled strip in any quarter.

The direction provides further that within the allowable tonnages mentioned above, a warehouse can order in any quarter, beginning with the third quarter, up to 12½ per cent of its 1944 purchases of hot rolled pickled (acid dipped) carbon-steel sheets or strip, or 30 tons, whichever is greater.

◆

Blower Order Revoked

THE War Production Board announced June 2 the revocation of General Limitation Order L-123, which covered production and distribution of 26 specific items of general industrial equipment. Items thus freed and used in our industry are: Air filters; air washers; compressors; dust collectors, industrial; electric motors and generators (fractional horsepower); fans, blowers and exhausters; heat exchangers; ovens, industrial; drying, curing and finish-baking types; insulation blowing machines.

The production and delivery of these items remain subject to all other applicable orders and regulations of WPB.

◆

Price of Felt

ESTABLISHMENT of uniform dollar-and-cent ceiling prices for 15-pound asphalt saturated felt and tar saturated felt in rolls of 324 square feet was announced by the OPA May 18.

The new ceilings for these roofing materials, in 324 square foot rolls, f.o.b. shipping point, are $1.49 per roll less 6 per cent and 5 per cent in less-than-carload shipments, and $1.28 per roll less 5 per cent in carload shipments.

(Amendment No. 5 to Revised Price Schedule No. 45—Asphalt and Tarred Roofing Products—effective May 23, 1945.)

◆

CMP-1 Change

CMP Regulation 1 has been amended to provide that a manufacturer may exceed an authorized production schedule for a Class B product in a case where he has obtained the material for another purpose and it can no longer be used for that purpose.

The amended regulation continues the provision for filling a deficiency in a production schedule to the extent that a deficiency not exceeding 10 per cent in an authorized production schedule for a Class B product during the first quarter of 1945 may be made up in the second calendar quarter of 1945. If a production schedule is authorized by months, the amount authorized during each of the three months of a cal-

(*Continued on page* 134)

You Can't Win by Price Cutting

By Arthur Roberts

PRICE cutting is the bane of businessmen. During the war shortages and restrictions have eliminated much of it, but when manpower and merchandise become plentiful again, price cutting will return to the picture to the detriment of this industry. Much has been said and written against it but to little avail. We believe one reason for this is that the hazards lurking in promiscuous price cutting are not readily transmitted with words, so we are showing the danger figuratively here in the hope that this easy "eye-way" will deter members of this industry from cutting prices injudiciously. *Don't be a Patsy for the price buyer.*

Always consider a price cut in relation to your net profit and margin, not to the selling price. Let's assume that your experience figures for a prior period are:

Example A

Sales	$5,000	100%
Cost of sales	3,000	60
Margin on sales	$2,000	40%
Overhead expense	1,500	30
Net profit on sales	$ 500	10%

On the same volume in a subsequent period, you can't cut prices more than 10 per cent or you see red.

Example B

Sales	$4,500	100 %
Cost of sales	3,000	66.6
Margin on sales	$1,500	33.4%
Overhead expense	1,500	33.4
Net profit	$0,000	00.0%

If you cut prices 10 per cent, you must increase sales 33⅓ per cent to make the same dollar-profit shown under Example A, to wit:

Example C

Sales		$5,000
Price-cut 10%		500
Reduced selling prices		$4,500
Additional volume needed to offset price-cut	33⅓%	1,500
Total volume sold at cut prices	100 %	$6,000
Cost of sales	66⅔%	4,000
Margin on sales	33⅓%	2,000
Overhead expense (unchanged)	25% (See A)	1,500
Net profit on sales	8⅓%	$ 500

The figures under Example D show that if you cut prices 10 per cent, you must increase sales 40 per cent to make the same ratio of net profit shown under Example A.

Example D

Sales		$5,000
Price-cut 10%		500
Reduced selling prices		$4,500
Additional volume needed to give the same percentage of net profit		1,750
Total volume sold at cut prices	100 %	$6,250
Cost of sales	66⅔% (See C)	4,125
Margin on cut-price sales		$2,125
Overhead expense (unchanged)	(See A, B, C)	1,500
Net profit on cut-price sales	10% (See A)	$ 625

The figures shown under Examples A, B, C, D are conservative because overhead is assumed unchanged. In actual practice, overhead will increase with volume, more or less, depending on capacity, but even a slight increase must be offset by higher sales increases than shown.

The lower your margin, the higher the volume needed to offset the same price cut.

Suppose your experience figures show these ratios:

Example E

Sales	$5,000	100%
Cost of sales	3,500	70
Margin on sales	$1,500	30%
Overhead expense	1,000	20
Net profit on sales	$ 500	10%

Suppose you cut price 10 per cent during the next period on the same volume:

Example F

Sales	$5,000	
Price cut 10%	500	
Reduced selling prices	$4,500	100 %
Cost of sales	3,500	77.7
Margin on sales	$1,000	22.3%
Overhead expense (unchanged)	1,000	22.3
Net profit on sales	$0,000	00.0%

To earn a net profit similar to that on Example E, you must show these figures the next period:

Example G

Sales		$4,500
Increase in sales	(50% increase)	2,250
Total volume sold at cut prices	100 %	$6,750
Cost of sales	77.7	5,244
Margin on sales	22.3%	$1,506
Overhead expense	(See Exhibits E, F)	1,000
Net profit on sales	(See E)	$ 506

Under Example C, a sales increase of 33⅓ per cent is needed to offset a 10 per cent price cut when margin on sales is 40 per cent. Under Example G, a 50 per cent sales increase is needed to offset a 10 per cent price cut when margin is 30 per cent. The lower the margin, the more volume needed to offset the same price cut.

Under Example C, if the businessman could increase volume more than 33⅓ per cent, he might increase the ratio of net profit to sales and also the dollar-profit over the figures shown on Example A, to wit:

Example H

Sales	(See C)	$4,500
Increase in sales volume	(50% increase)	2,250
Total volume at reduced prices		$6,750
Cost of sales	66⅔% (See C)	4,500
Margin on sales		$2,250
Overhead expense (unchanged)	(See C)	1,500
Net profit on sales	11.1% (See C)	$ 750

Price Cuts Need More Volume

Compare the figures under Example C with those under Example H and you can see that it is possible to earn more profit by cutting prices, *but* few businessmen can boost volume 50 per cent by cutting prices or using price as sales bait. The hazard of loss is much greater than the chance of gain. Sheet metal contractors and warm air dealers should always bear this fact in mind. Price cutting is justified only when you want to move obsolete stock or shelf-warmers or when you effect economies that might be passed on to customers.

You Need Experience Figures

Before price cutting, analyze your experience figures and then check the hazard mathematically with the formulas shown in the foregoing tables. Don't cut prices to meet competition. Do business on your own experience figures. If your selling prices are out of line with the general level, improve your business control and promotional efforts. This is the only way to take the knocks out of your business engine.

Sound enterprise can be built up only by, first, knowing your actual income, outgo, and profit, determined from adequate and accurate financial records; second, applying these figures to current sales by means of cost-finding records; and, third, filing these records for comparative study to determine whether all elements of operation are up to the standard required to make the desired profit.

Time Needed to Convert

A STUDY of the industries judged to be most seriously in need of preliminary reconversion help in return to peace-time production has been released by WPB. All of the industries concerned, WPB said, have now had an opportunity to discuss their reconversion problems with the industry division of WPB under which they operate.

The studies reveal a wide variance in both needs and time required to get the wheels of peacetime production revolving. Manufacturers in our industry who have reported show the following data:

Current and Proposed Production

Industry	Current Production Per Quarter	Contemplated Peacetime Production: Minimum or Break-even Rate of Production Per Quarter	Contemplated Peacetime Production: "All Out" or Capacity Rate of Production Per Quarter
Gas Burners	$ 1,500,000	$ 600,000	$ 1,000,000
Heating Controls and Heating Specialties	50,000,000	10,800,000	18,000,000
Indirect Water Heaters	.....	1,100,000	1,820,000
Low-Pressure Steel Boilers	8,640,000	1,000,000	2,640,000
Mechanical Stokers	30,000,000	3,450,000	5,750,000
Oil Burners	9,200,000	6,000,000	10,000,000
Warm Air Distribution Equipment	7,500,000	4,500,000	7,500,000
Warm Air Furnaces	52,500,000	9,000,000	15,000,000

New Construction Required (Dollars)

Industry	Minimum or Break-even Rate	"All Out" or Capacity Rate
Warm Air Distribution Equipment	0	$1,000,000
Warm Air Furnaces	0	250,000

Value of Equipment Required Before Operation Can Start at Minimum and "All Out" Rates

Industry	Minimum or Break-even Rate	"All Out" or Capacity Rate
Gas Conversion and Industrial Gas Burners	0	0
Heating Controls and Heating Specialties	0	$125,000
Mechanical Stokers	0	0
Oil Burners	$180,000	300,000
Warm Air Distribution Equipment	0	250,000
Warm Air Furnaces	0	250,000

Reconversion Time Required

Industry	Reconversion Time Required (unit-months): Minimum or Break-even Rate	Reconversion Time Required (unit-months): "All Out" or Capacity Rate
Gas Conversion and Industrial Gas Burners	0	2
Heating Controls and Heating Specialties	0	3
Mechanical Stokers	0	2
Oil Burners	2	3
Warm Air Distribution Equipment	0	0
Warm Air Furnaces	0	1

More Construction Without Priority Approval

THE first stop in relaxation of control over construction activities has been taken May 29 by amending L-41. Chief change made by the amended order is the raising of the annual dollar value limits on various types of construction that may be undertaken without WPB authorization.

Construction order L-41 formerly prohibited construction without specific WPB authorization, except for jobs falling within very small annual cost limits. Applications for permission to undertake new construction above these limits were in general denied except where projects were clearly required for the prosecution of the war or for war-supporting activities.

Under amended Order L-41, small industrial and commercial structures and certain other types of projects important to the civilian economy may be undertaken without specific WPB authorization. Major construction projects for which WPB authorization is required must still be justified as essential to war production, or to public health and safety and critical civilian needs. In addition, some reconversion projects that will contribute to employment when full-scale reconversion is possible will be authorized.

The allowable limits for construction undertaken without priority approval have been raised to the following:

(1) One-family house, including a farmhouse, $1,000; two-family house, $2,000; three-family house, $3,000; four-family house, $4,000; and five-family house, $5,000. These limits apply to repair and maintenance work as well as to alterations and new construction. Cost limit for a house up to and including a five-family house was formerly $200.

(2) Farm construction, exclusive of farmhouses, $1,000. Formerly the $1,000 limit included the farmhouses, for which not more than $200 could be spent.

(3) An irrigation or drainage system serving more than one farm, $1,000. This exemption is the same as in the former order.

(4) A hotel, apartment building or other residence for six or more families, $5,000. The cost limit was formerly $1,000.

(5) An office, bank, store, laundry, garage, restaurant, theater, warehouse or other retail or wholesale service establishment, $5,000. This category formerly had a cost limit of $200. Warehouses were in separate category with a $1,000 limit, and $200 was the limit for a frozen-food locker plant.

The amount of maintenance and repair work that may be done on buildings in categories (4) and (5) is limited. Formerly there was no such limitation.

(6) A church, hospital, school, college, public playground for children, a publicly-owned building or group of buildings used for public purposes, an orphanage or other building used exclusively for charitable purposes, $10,000. Three former categories with $1,000 limits have been combined in this group and some new types of construction have been added.

(7) A factory, plant or other industrial plant, commercial airport, bus terminal, truck terminal, a railroad or street railway building or group of buildings, a research laboratory or a pilot plant, $25,000. Formerly the limit for a factory or plant was $5,000, except that if the product manufactured was in Schedule A of the former order, the limit was $200.

Schedule A does not appear in the amended order. Formerly, construction jobs in plants manufacturing products listed in Schedule A could be undertaken without WPB authorization only within an annual cost limit of $200.

(8) Any other kind of unit, $1,000. Cost limit for this category was formerly $200.

Twenty-three special kinds of construction may be undertaken without WPB permission regardless of annual cost limits. These exemptions are, in general, the same as formerly appeared in the order, its Schedule B and interpretations and directions.

Other important changes in exemptions are:

The exemption for the installation of equipment (formerly Direction 2) has been broadened to permit installation or erection of equipment outside buildings. However, installation of service equipment is permitted only when the equipment was obtained on a specific application, such as WPB-541.

(*Continued on page* 133)

But Note This — You Must Pay in 18 Months

THE Board of Governors of the Federal Reserve System has adopted Amendment No. 16 to its Regulation W, relating to Consumer Credit. The changes take effect June 11, 1945.

Under the amendment, *no* credit transaction in the home improvement field is any longer exempted from the Regulation by reason of the way in which it may be secured, the area in which it may be located, or the type of job to which it may relate.

For all such credit transactions, if they relate to residential property and are not over $1,500, a maximum maturity is prescribed, but no down payment requirement is prescribed for any of them. For such transactions entered into on and after June 11, 1945, the maximum maturity may not exceed 18 months, except that for certain "fuel conservation credits" extended during the next five months (prior to November 1, 1945) the maximum maturity may be 24 months. Heretofore some fuel conservation transactions have been altogether exempt, some have been subject to a maturity limitation of 12 months, and others have been subject to both a down payment requirement of one-third and a maturity limitation of 12 months.

Although the classification of listed articles previously included stokers, furnaces, water heaters and water pumps of certain specified sizes only, on and after June 11, 1945, *all of these articles* will be included in Group C regardless of their size if they are installed in a residential structure and the credit extended is in an amount of $1,500 or less.

NEWS SUMMARY OF THE MONTH

48-Hour Week Change

PERMISSIVE authority to retain or revoke the 48-hour work week in 28 areas in which by regulation it had originally been made mandatory was delegated May 17 to the War Manpower Commission regional directors. The amendment provides that regional manpower directors may rescind the 48-hour work week in the 28 areas upon a finding that its continuance is no longer necessary to alleviate labor shortages that are impeding the war effort.

The 28 areas involved in today's amendment are as follows:

Akron, Ohio	Macon, Ga.
Baltimore, Md.	Mobile, Ala.
Bath, Maine	New Britain, Conn.
Beaumont, Texas	Ogden, Utah
Bridgeport, Conn.	Pascagoula, Miss.
Buffalo, N. Y.	Portland, Ore.
Charleston, S. C.	Portsmouth, N. H.
Cheyenne, Wyo.	San Diego, Calif.
Dayton, Ohio	Seattle, Wash.
Detroit, Mich.	Somerville, N. J.
Elkton, Md.	Springfield, Mass.
Hampton Roads, Va.	Sterling, Ill.
Hartford, Conn.	Washington, D. C.
Las Vegas, Nev.	Waterbury, Conn.

Mfrs. Must File Prices

MANUFACTURERS of consumer durable goods are required by the OPA to supply the agency with copies of their current catalogues and price lists on or before July 15, 1945, OPA announced June 1.

Three copies should be filed with the manufacturer's OPA district office. The extra copies will be sent to the regional and national offices for their files.

In addition, manufacturers are asked to put OPA on their mailing list for any new notifications sent to the trade concerning prices, terms of sales, or changes in designation for articles manufactured. Copies of these notifications should be furnished the OPA district office within ten days after being issued to the trade.

These filings are required to aid OPA in establishing ceiling prices for consumer goods of new manufacturers in line with existing ceiling prices for the same or comparable items. The filings also will assist the price agency in checking the prices of new goods put out by old-line manufacturers.

(Amendment 58 to Maximum Price Regulation 188 —Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective June 7, 1945.)

Late Rulings on Veterans' Problems

Definition of Apprenticeship

IT IS of no service to veterans if they are placed in trades that they have no desire to learn or that they are unable to perform, War Manpower Commission points out. To aid local offices of USES in referring service men to suitable apprentice training, a booklet, "Apprenticeable Occupations," has been released by the Division of Occupational Analysis of WMC. A summary of the physical activities and working conditions of all trades is included in the volume.

Definitions of true apprenticeship, *which are reserved for the all-round skilled trades* and which have been adopted by WMC's Apprentice-Training Service, include the following basic standards:

1. An apprenticeable occupation is considered one that requires 4,000 or more hours to learn.
2. A schedule of the work processes to be learned on the job.
3. A progressively increasing scale of wages for the apprentice that should average not less than 50 per cent of the journeymen's rate over the apprenticeship period.
4. Provision for related classroom instruction (144 hours per year of such instruction is normally considered necessary).
5. Terms and conditions of the employment and training of each apprentice to be stated in a written agreement and registered with the State Apprenticeship Council or the Federal Committee on Apprenticeship.
6. Review of local apprenticeship by the State Apprenticeship Council or the Federal Committee on Apprenticeship.
7. Apprenticeship to be jointly established by the employer and the employe.
8. Adequate supervision and the keeping of records for all apprenticeship programs.

Copies of the "Apprenticeable Occupations" booklet may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

◆

Veterans for Civilian Industry

SO THAT more jobs will be made available to qualified veteran applicants re-entering the labor market or disemployed as the result of war production cutbacks, USES will accept and process, for interoffice recruitment, job orders from employers who specify they wish to employ veterans, even though such employers may be engaged in work of a less essential nature than was formerly demanded as a requirement by USES. However, that no order will be accepted for interoffice recruitment if qualified veterans or non-veterans are available in the local labor market.

The relaxation will bring about the following

changes:

1. The employer's order need not warrant the assignment of a manpower priority rating.

2. Since the employer need not be engaged in war production in order to hire veterans, and the veteran may take a non-war job if he prefers, the local USES will be free to clear such orders in any community where veterans may be available.

3. When a request for fewer than 10 workers is involved, the employer does not have to send a hiring representative or subscribe to advertising at recruitment points.

4. Although every effort will be made to urge employers to provide transportation, strict adherence to this standard will not be expected in the future.

◆

Shop Training Required

THE Federal Committee on Apprenticeship has recommended that, to protect the veterans and to maintain the standards of apprenticeship, adequate safeguards be set up by State agencies authorized to approve business establishments for apprentice training to assure veterans thorough training in all skilled trades.

Veterans should not be led into thinking that they can learn trades in school or through employment in only parts of trades or in a few occupations that do not offer versatility or that do no measure up to apprenticeship criteria, the committee said.

To enable former service men to obtain appropriate credit in apprenticeship for work experience gained while in the service, the committee decided that ATS, in cooperation with management and labor, should provide for evaluation of veterans' experience.

It was brought out at the meeting that industry can place about 300,000 veterans in apprenticeship in the United States.

◆

"Job Rights" Defined

THE returning veteran who meets all the requirements of the Selective Training and Service Act for reemployment in his former job has an absolute right of reinstatement in his former position or in a substantially similar position, according to a decision issued by Selective Service System May 9.

The statement interprets the Selective Service Act as restoring the veteran to his old job if he meets the conditions of the act, rather than merely restoration of his "job rights" in accordance with a system of seniority "or other system of relative employe status existing in the employer's business."

The statement declares that the only restrictions upon the veteran's right to reinstatement are as follows:

(1) That the veteran receive a certificate of satisfactory service.

(2) That he still be qualified to perform the duties of his position.

(3) That he make timely application for reinstatement.

(4) That the restoration be not unreasonable or impossible because of the employer's changed circumstances.

Helps For Conversion

Conversion Aids

DIRECTION 25 to Controlled Materials Plan Regulation 5 has been amended by WPB to permit any person who is planning to make any product to use the preference rating and MRO allotment symbol (if any) assigned to the manufacture of that product, under CMP Regulation 5, to get MRO supplies and minor capital additions which he requires *before actually beginning production.* Any person also may use the preference ratings assigned by CMP Regulation 5 to the product he is going to manufacture in order to obtain jigs, dies, fixtures, minor hand tools and special tooling.

If a person wants to make the tooling items himself or furnish material to another person to make special tooling for him (under Direction 36 to CMP Regulation 1), he may use the MRO allotment symbol to get the controlled materials (whether or not the product is listed on Schedule A of CMP Regulation 5) and may get the other materials by use of the preference rating assigned by CMP Regulation 5 to the production of the product for which he will use the jigs, dies, fixtures, special tooling or minor hand tools. Any purchases made under the provisions of Direction 25 must be charged against the MRO quota provided in CMP Regulation 5.

Amended Direction 15 to CMP Regulation 5 provides that any person who has obtained machinery or equipment, which he is permitted to install or relocate under Direction 2 to Order L-41 (Construction), and who needs priorities assistance to get building materials to install or relocate the machinery or to make building alterations, may use the MRO symbol and rating assigned to the business or the manufacture of the product for which he will use the machinery or equipment.

◆

Relax WMC Order

SMALL firms whose employment will not exceed 100 workers may now obtain materials without first seeking assurance from the War Manpower Commission that manpower is available. Heretofore, WPB refused to allocate materials without such prior assurance.

When workers are *hired,* however, all WMC hiring regulations in effect in the area must be observed in order to insure necessary war production.

Under WPB Limitation Order L-41, materials may be obtained for construction projects employing no more than 25 workers without prior WMC clearance as to the labor involved. All WMC hiring regulations in effect in the area must be observed after the allocation of materials.

◆

Experimental Models

RESTRICTIONS on the production of experimental models were relaxed May 9 by WPB. The experimental model regulation (PR 23) allowed persons

to make experimental models of products only by obtaining WPB authorization to spend more than $5,000 in a single plant in any calendar month in making models.

The May 9 action removes this dollar limitation and removes the restriction on exhibition of models to the trade or to the public. WPB also said that although a manufacturer may now circulate or display models made for bona fide experimental purposes, he may not make such models solely for purposes of display.

◆

Prices For New Items

FOR new items of consumer durable goods, manufacturers' applications for maximum prices under the fourth pricing method of the general consumer durable goods regulation must hereafter be filed directly with the 93 district offices of the OPA.

The fourth pricing method provides a means for new manufacturers and for established manufacturers going into an entirely new line of business to obtain a specific authorization for maximum prices before offering an item for sale.

This action does not apply to manufacturers reconverting to their old lines or to the production of articles similar to those they made before the war.

There is no change in the pricing standards by which ceilings will be set under the fourth pricing method of the regulation, the agency said. Applications still will be filed in duplicate together with a sample of the manufactured item, if practicable. The only change is that manufacturers affected will file all applications directly in the OPA district offices instead of in Washington.

(Amendment No. 55 to Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective June 2, 1945.)

◆

Stockpiling Permitted

MODIFICATION of inventory controls under Priorities Regulation 1 and Controlled Materials Plan Regulation 2 now permits stockpiling by allowing a person to receive, in anticipation of starting or resuming civilian production, the *minimum* amount of material he would need during the first 30 days of production, provided no priorities assistance or allotment symbol is used to get the material.

Regulations limiting receipts of material still apply, whether or not the material is acquired with priorities assistance and whether it is for civilian or war production.

Direction 7 to PR 1 and Direction 23 to CMP 2 also have been issued. Both regulations provide additional exceptions from inventory restrictions, relating to continued receipts of special items after contract cut-

(*Continued on page* 130)

Increase Steel Price

AN INCREASE that will amount to between one and two per cent in basic steel prices was announced May 21 by OPA. These increases total $2 to $7 a ton for fourteen basic mill products.

The increases effective May 23, 1945, are designed to permit steel companies to recover some of their increases in production costs experienced since 1941 and are the minimum increases required by law on a "product standard" basis under the Emergency Price Control Act as amended. With the data on last year's production as a guide, it is estimated that after absorption by warehouse distributors and purchasers of semi-finished steel, the increases will amount to less than two per cent of the total sales of the products covered by the steel mill products regulation.

The increases are divided into two groups:

1. New adjustment in ceiling prices for hot rolled carbon steel plates, hot rolled carbon steel sheets, galvanized steel sheets, steel rails, and bright nails and staples, for which interim price increases of $2 to $5 a ton were authorized on January 11, 1945, and

2. A list of basic steel mill products whose prices are being increased for the first time since 1941 or before price control began.

The new adjustments in products for which interim price increases were authorized January 11 are:

1. Carbon steel plates are increased 15 cents per 100 pounds. This increase replaces the interim increase of 10 cents per 100 pounds authorized January 11 for carbon plates.

2. Hot rolled carbon steel sheets, all sizes and gages, are increased 10 cents per 100 pounds. This increase replaces the interim increase of 10 cents authorized January 11 and, therefore, results in no change in hot-rolled carbon sheet prices generally.

3. Galvanized iron and steel sheets, galvanized iron and steel roofing and siding, and zinc coated specialty iron and steel sheets (except galvannealed sheets) are increased 20 cents per 100 pounds. This increase replaces an interim increase of 15 cents per 100 pounds granted January 11.

Warehousemen and jobbers will be permitted to pass on to their customers only a few of the ceiling price increases of $2 to $7 per ton authorized.

Effective May 23, 1945, warehousemen and jobbers may pass on to their customers the following: The increase of 20 cents per 100 pounds for galvanized roofing and siding and 10 cents per 100 pounds for painted roofing and siding which replaces the interim increases of 15 cents and 10 cents per 100 pounds, respectively, which were authorized at the mill level January 11.

Effective May 23, 1945, warehousemen and jobbers must absorb the following:

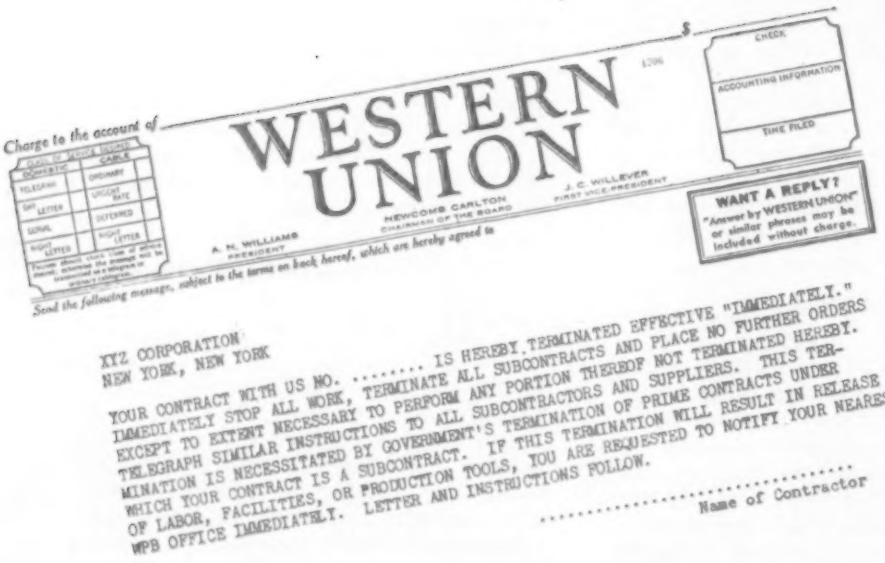
1. The mill price increase of 15 cents per 100 pounds for carbon steel plates, which became effective May 23, and replaced an interim increase of 10 cents per 100 pounds authorized January 11.

2. The increase of 10 cents per 100 pounds for hot-rolled carbon sheets (except painted roofing and siding), all sizes and gauges, which became effective May 23 and replaced an interim increase of a like amount authorized January 11.

3. The 20 cents per 100 pounds increase for galvanized iron and steel sheets (other than galvanized roofing and siding) and zinc-coated sheets which became effective May 23 and which replaced an increase of 15 cents per 100 pounds granted January 11.

4. The mill price increase of 10 cents per 100 pounds for carbon steel hot rolled bars and bar size shapes, all types and qualities.

(Amendment No. 31 to Revised Price Schedule No. 49—Resale of Iron and Steel Products—effective May 23, 1945.)



Charge to the account of

WESTERN UNION

$

CHECK

ACCOUNTING INFORMATION

TIME FILED

WANT A REPLY?
"Answer by WESTERN UNION" or similar phrases may be included without charge.

A. N. WILLIAMS, PRESIDENT
NEWCOMB CARLTON, CHAIRMAN OF THE BOARD
J. C. WILLEVER, FIRST VICE-PRESIDENT

Send the following message, subject to the terms on back hereof, which are hereby agreed to

XYZ CORPORATION
NEW YORK, NEW YORK

YOUR CONTRACT WITH US NO. ..... IS HEREBY TERMINATED EFFECTIVE "IMMEDIATELY." IMMEDIATELY STOP ALL WORK, TERMINATE ALL SUBCONTRACTS AND PLACE NO FURTHER ORDERS EXCEPT TO EXTENT NECESSARY TO PERFORM ANY PORTION THEREOF NOT TERMINATED HEREBY. TELEGRAPH SIMILAR INSTRUCTIONS TO ALL SUBCONTRACTORS AND SUPPLIERS. THIS TERMINATION IS NECESSITATED BY GOVERNMENT'S TERMINATION OF PRIME CONTRACTS UNDER WHICH YOUR CONTRACT IS A SUBCONTRACT. IF THIS TERMINATION WILL RESULT IN RELEASE OF LABOR, FACILITIES, OR PRODUCTION TOOLS, YOU ARE REQUESTED TO NOTIFY YOUR NEAREST WPB OFFICE IMMEDIATELY. LETTER AND INSTRUCTIONS FOLLOW.

.....
Name of Contractor

When Your Contract is Cancelled

(Questions and Answers)

IF a prime contractor makes a pretermination agreement with the Government, should his subcontractor make a pretermination agreement with the prime contractor?

Pretermination settlement agreements made between war contractors and their subcontractors may be made in accordance with substantially the same principles that apply to agreements between the Government and prime contractor. Such agreements will be recognized as binding upon the Government when approved by the contracting officer. Contracting officers may approve such agreements, subject only to such directions and conditions as may be prescribed by the chief of the service, in all cases in which they could make similar agreements with prime contractors.

The specific answer to this question is that if any advantage accrues to the prime from a pretermination agreement, it is reasonable to assume that similar advantages will accrue to the subcontractor if he makes an agreement with the prime.

What is meant by starting load costs?

Starting load costs have always occurred in industrial operation, but it is only since we began terminating war contracts that the term "starting load" has received much attention.

Manufacturers have always known that when they started to manufacture a new item requiring the use of new machines, new help, or the training of old employes to make a new item, the actual cost to produce the new item, until the employes became familiar with the various operations, would be much higher than the average estimated cost. This additional starting expense was designated as starting load costs for purposes of settling termination claims.

If a manufacturer has a contract to manufacture 100,000 units and he is permitted to complete the contract, he will absorb the starting load cost as his production efficiency improves, and his average profit per unit will be at the normal or anticipated rate.

However, if this contract is terminated when it is only 10 per cent completed, he would sustain a loss if he could not recover a portion of the starting load costs which would have been absorbed had the contract been completed.

The method used to compute a contractor's starting load claim is as follows:

Contract for 100,000 units.

Average manufacturing cost is $1 per unit.

Contract terminated after 10,000 units completed.

Cost per unit is $1.10 for first 10,000 units.

It is apparent that the starting load here is $1,000, representing an excess of 10 per cent over the average cost for 10,000 units. This $1,000 starting load would apply to the entire contract since the initial cost was a necessary portion of total cost to complete the contract.

Ten per cent of the starting load cost would apply to the 10 per cent of work completed and 90 per cent of that cost would apply to the 90 per cent, or the terminated portion. Therefore, $100 of the starting load cost would be absorbed by the contractor as part of manufacturing cost for the completed portion, and his claim against the Government would be $900, the unabsorbed portion which is applicable to the terminated portion.

Obviously, where a war contractor makes a claim for starting load costs he is expected to have cost rec-

ords that enable him to substantiate his claim. Where starting load claims are in large totals, it is likely that the contracting officer for termination will ask for a Government audit to establish the accuracy of the claim.

Where can I procure specimens of the various forms used in settling termination claims?

"Standard Contract Settlement Proposal Forms" is the title of a booklet which may be obtained from Joint Termination Regulation Distribution Office, 90 Church Street, New York City, N. Y.

All forms necessary for a termination settlement are reproduced. These are particularly interesting because they are filled out to show just how they should be used.

What is meant by "contracting agency"?

According to the Contract Settlement Act, the term "contracting agency" means any Government agency which has been or hereafter may be authorized to make contracts pursuant to Section 201 of the First War Power Act, 1941.

Is a jobber a subcontractor if he furnishes only supplies to a war contractor?

The Act specifies, "The term subcontract means any contract, agreement, or purchase order heretofore or hereafter entered into to perform any work, or to make or furnish any material to the extent that such work or material is required for the performance of any one or more prime contracts or for any one or more other subcontracts."

How will I benefit by planning in advance for termination?

Both the Government and the contractor will benefit from a thorough discussion of anticipated terminations. It may be that terminations may not occur within the next year or two years. No one knows when it will be necessary to terminate. But it is certain that the war contractor who begins his planning now will be in far better position to dispose of his termination problems than the contractor who delays until his contracts are terminated.

May we finish work in process after we receive a termination notice?

If you are a prime contractor, the letter from the Contracting Officer for Termination will state specifically the time and extent of work stoppage. If you are to continue on any of the work in process, the letter of termination will authorize you to do so. Your first notice of termination will be by telegraph or telephone and this will be followed by a letter of detailed instructions. These instructions will state that you are to make no further shipments except as stated, to place no further orders in connection with the contract except to the extent necessary to perform such work not terminated, or to the extent that you may wish to retain and continue any work in process for your own account.

If you are a subcontractor you will be advised of termination by the prime contractor. You in turn should give notice of termination to each of your immediate subcontractors (or suppliers) who will be affected by the termination of your contract. The form of notice recommended will be found in Joint Termination Regulation, a copy of which may be obtained from the prime contractor or his Government contracting officer.

I am a prime contractor manufacturing an item in which some Government-furnished material is being used. If my contract is terminated I would like to purchase the Government-furnished material on hand in my plant so I could keep on making the item for civilian use. Can I do this?

The answer may be either yes or no, depending on the product, material, and whether you can pay approximately what the material is costing the Government. During the period when contractors were contacted by Government personnel, the contractors were given the privilege of making an offer for Government-owned material that might be on hand upon termination. However, it is still possible for the contractor to request a pre-termination agreement from the contracting officer. Such a pre-termination agreement, when completed, becomes a part of the contract and may be requested to form a part of any subsequent contract for the same item.

A pre-termination agreement may cover any problems that may arise upon termination, including retention offers for and disposition of materials. Where the operation of a plant and continuous employment can be promoted after termination by a pre-termination agreement, the contractor should arrange with the contracting agency for a conference to discuss the problem.

What is a "satisfactory" inventory schedule?

Classifications and descriptions are considered of prime importance in a "satisfactory" schedule. Obviously, quantities are important to the extent that a termination inventory should not list greater quantities of supplies or parts than would have been used to complete the contract. In listing any items on an inventory schedule we must keep in mind that the Government may be the disposing agency of such material. The property disposal section must have proper and complete descriptions of all items which it must sell. A purchaser will want to know exactly what he is buying, even when he buys from the Government.

A special machine costing $1,000 *was purchased to produce* 10,000 *units. The contract was terminated after* 6,000 *units were completed. I can sell the machine for* $280. *Will I lose the difference?*

Assuming that $280 is the best price obtainable, which the Government will establish through its Property Disposal Section, the problem may be worked out in this manner:

When an additional machine is necessary to do the work required on a Government contract, such a machine may be called a special facility; if it is a machine of the type not normally used by the contractor. When a contractor prepares to bid for a certain item and he needs a special machine or special facility to do the work, the general assumption is that he includes in his bid price, per unit, an amount that is sufficient to amortize the cost of the special facility when the contract has been completed.

Since the question conveys the idea that this special machine is of a type not normally used by the con-

(*Continued on page* 124)

Don Fisher, at his public address system (see text) ready to speak with his men or play music for a morning "pep-up."

Annual Wage Impracticable?

Fisher, in Cleveland, Has Had an Annual Wage Plan in Operation Since 1937

Don Fisher, owner and operator of A Home Heating Company, in Cleveland, is well known among members of the industry in Cleveland and northern Ohio as a fighter for his beliefs and an active association man—in every battle in Cleveland he has been right in the fight, not the least bit hesitant to express his ideas and not averse to changing his ideas when conditions warrant a change.

A Home Heating Company, under his management, has received considerable publicity for its aggressive sales and advertising programs. As Don Fisher says, "we did $4,000 volume our first year and have worked this up to around $150,000 a year, today, by using every trick in the books to get new business—advertising, newspapers, direct mail, telephone solicitation, canvassing and others."

Interesting as these sales programs are, there is another Fisher idea which, under present and post-war conditions, is even more interesting—his labor relations. This labor relations policy has solved the problem of keeping good men employed.

As Don Fisher explains it, he early realized that keeping his best men called for something beyond going wages. For example, in many shops the practice is followed (in normal times) of working men up to about Thanksgiving and then laying them off until March. Under this practice, the turnover in men is great and good men are lost and must be replaced—often by less capable men. Frequently, this shoots quality work into a cocked hat. So back in 1937 Fisher installed a system whereby the employee receives 70 per cent of his wages as of the preceding year, payable each week, whether the man works one hour or fifty hours a week. Specifically, if a man earned $2400 the preceding year, he is paid each Saturday about $32.00 for a week's work. He gets this $32 every week through the summer and through the winter whether he works full time or not.

In weeks when he works only part time, he begins to owe the company money, but through the years the system has been in use, it has always turned out that all employees are clear of debt to the company by the first of June and back on their predetermined salaries.

This system is really an "annual wage"—something labor and management is seriously considering today. The system gives the employee security and a wage all year round. He has nothing to worry about in the slack winter; he can budget his living knowing he can count on certain wages; he is a better employee; willing and ready to do quality work in the busy season when he is needed most. Using this system, Fisher has been able to keep a selected working force employed all year round.

This "annual wage" also carries vacations with pay. When a man has worked his first year he gets one week vacation with pay; after two years he gets two weeks with pay—and takes his vacation in the slack season by prior arrangement.

Fisher also pays a Christmas money bonus.

Another Fisher innovation which is especially appre-

ciated by the wives of employees is the "free beer." It was found that men came in from work on hot days thirsting for a cold glass of beer and in winter for something to warm them up. The nearby saloon was the logical first place of call. A few beers lead to further drinking—the man might lay off the next day; or he might squander too much of his money buying drinks. So Fisher installed a "free beer" chest (soft drinks also); now when the men come in from work they are free to drink as much beer as they wish. Usually one or two bottles satisfies them and they are ready to go home—having spent no money.

One of the photographs shows a shop broadcasting system. If Fisher wants to he can talk to the men over this system—more frequently the system is used to play records on days when the men are working indoors. It has developed that music on "blue Mondays" or in the morning gets the men started with a song and a smile and relieves the monotony of dull days.

At all times the workman's personal problems are given consideration. Money troubles are always a problem—a man needs a small loan to tide him over some emergency—the firm loans the money and the man is relieved of the cost and worry of making a loan. This company loan policy has also helped to keep men from going heavily in debt for things not actually needed.

As to post-war plans—A Home Heating Company expects to keep these labor relations policies in force; the company expects to pursue aggressive sales methods; plans have been drawn for a new shop and enlarged display space to show post-war products. The company expects to sell stokers, attic ventilating fans, major household appliances and, of course, a complete line of furnaces and air conditioning equipment. It is hoped to have ready for the post-war market a complete plan for time financing so that customers can buy and finance, without red tape or undue expense, any of the equipment the company plans to sell.

Free beer, for the men after their day's work, keeps Fisher mechanics out of the taverns and builds goodwill with wives and workmen.

Army-Navy Termination Regulation

THE Joint Army-Navy Termination Regulation (revision No. 1, 20 April 1945) has been revised. Revision No. 1 should be substituted *in its entirety* for original JTR, issued last November.

A summary of the most important changes follows:

Interim Financing

One of the major difficulties in the settlement of terminated contracts is the problem of enabling subcontractors, both immediate and more remote, to obtain partial or complete payment on their termination claims. The revision of the JTR has taken four concrete steps in the direction of solving this problem (references, unless otherwise indicated, are to paragraphs of the JTR):

1. War contactors having required qualifications may obtain, directly from the Government, a loan without interest to create a fund from which partial and final payments may be made to subcontractors, under prime contracts with services of the War Department and with bureaus of the Navy Department (364).

2. Partial payments may now be more widely obtained by war contractors for the purpose of making partial and final payments to their subcontractors.

3. In the Navy, certain material inspectors in the field have been authorized to approve partial payments not exceeding $25,000, obviating the necessity of obtaining the approval of the contracting officer in Washington (314.2, 351.1, 362).

4. War contractors may use funds in advance payment accounts to make partial and final payments to subcontractors under the conditions now set forth in the revised Regulation (332).

Advance Preparations

Many of the decisions which must be made when termination comes can be made in advance of termination as well. The more planning a war contractor does in advance of termination, the more quickly he will be able to resume normal production and take the steps necessary to settle his claim after termination.

A complete discussion of such advance planning is included in this revision of JTR (220-227.4). Advance preparations for termination settlements may take three forms. First, discussions between representatives of the contractor and of the Government will familiarize each other with the problems that will arise and the procedures to be followed upon termination. Second, such discussions may lead to informal understandings, which, although not binding, may, if conditions have not changed, served as the basis for settlement upon termination. Finally, formal binding agreements may be entered into covering the entire field of decisions which must be made in settling a contract after termination. Moreover, upper tier con-

(*Continued on page* 79)

"Period 1" Program

FOLLOWING are the reconversion policies and procedures which will be in effect in "period 1." Period 1 is the time between the victory in Europe and victory over Japan.

(1) *CMP*

During the third quarter, CMP will operate as heretofore with the exception noted in point (2) below. During the fourth quarter CMP will operate as heretofore, but it is expected that its present coverage of programs will be reduced.

(2) *CMP Open Ended*

The Controlled Materials Plan will be open-ended effective July 1, 1945, so as to permit the delivery after that date, without CMP allotments, of steel, copper and aluminum where delivery can be made without interference with authorized CMP orders. In other words, orders may be placed immediately for deliveries to be made after July 1, 1945.

(3) *Orders*

(a) It will be necessary to retain a substantial number of orders covering the production, distribution and use of materials and products that will continue in short supply.

(b) Insofar as possible, orders now limiting the production of civilian hard goods (generally those now listed in Direction I of Priorities Regulation 25) will be revoked progressively as resources are released.

(c) In addition to the above orders limiting the amount of production, some other orders containing standardization or simplification measures may be retained so as to assure maximum production of needed items.

(4) *Programming*

Through the third quarter, 1945, and in some cases for the balance of the year, existing civilian programs already authorized will continue to receive affirmative priorities assistance, including CMP allotments for production materials. The production of additional civilian products will not receive such affirmative assistance on a program basis except where it is determined by the Requirements Committee that such assistance is needed to meet minimum war supporting or critical civilian and export needs.

(5) *Spot Authorization Plan*

After July 1, the spot authorization plan will be used only for the authorization of greater production than is allowed under the few remaining orders limiting hard goods output, subject to manpower clearances on larger producers in tight labor areas and a check as to materials availability. Even in these cases, the spot plan will no longer be used as a means of granting affirmative priorities assistance. The Z-1 allotments and preference ratings given to manufacturers under the spot authorization plan will become invalid as of July 1.

(6) *Manpower Clearances*

In Group I and II WMC Labor Areas manpower clearances will be required for increases in programmed production, but only for plants with more than 100 wage earners. These manpower clearances will not be required for unrated civilian production, except in the case of "spot" authorizations under the remaining production control orders.

(7) *Smaller Manufacturers*

A new regulation, PR-27, will give to manufacturers, including veterans and new enterprises, who produce less than $50,000 worth of products per quarter, the right to use AA-4 preference ratings and to place deferred (Z-3) CMP orders for their production materials. This regulation is designed to help smaller manufacturers to get their fair share of production materials.

(8) *Preference Ratings*

The present rating system will continue for the 3rd Quarter, 1945. The emergency AAA Preference Rating and individual directives will also be continued. The WPB Field Offices will be given authority to give "spot" ratings and assistance with a greater latitude than is presently authorized. This will include uprating from deferred allotments to firm allotments for "spot" assistance on civilian production, as well as higher ratings when such action is clearly necessary.

(9) *Scheduling*

Current scheduling procedures will be maintained for components and products in very tight supply where preference ratings alone do not suffice to meet urgent programs on schedule. The number of scheduled items will be substantially reduced.

(10) *Surplus Materials*

Priorities Regulation 13 has been revised to permit the movement of surplus steel, copper, and aluminum on an unrated basis for uses no longer restricted by WPB Regulations.

(11) *Distribution Controls*

Distribution controls governing the flow of end items, including the use of WPB-547 (PD-IX) will generally be retained through the third quarter, but will then for the most part be removed, except where clearly necessary to prevent genuine and widespread hardship, irreparable damage, or failure to meet such needs as public health and safety. Consumer rationing will be retained only for items remaining in serious short supply and necessary to assure fulfillment of war supporting and critical civilian needs. It is not proposed to ration consumers' items not now under control except to meet presently unforeseeable emergencies.

(12) *Inventory Controls*

Inventory limitations are being retained. They will be amended to permit some pipelining and to cushion the shock of contract terminations and cutbacks. Continuation of these controls will help prevent preemption or hoarding of scarce supplies.

(13) *Construction Controls*

The construction control order L-41 will be retained but will be progressively relaxed as resources become available. L-41 amended increases the dollar exemption limits, and the standards for authorizing larger projects to permit approval of projects that contribute to large scale future employment and to satisfy other highly essential needs.

(14) *Preparation for Reconversion*

Action is already being taken to assist industry to get ready for civilian production by giving priorities for the acquisition of bottleneck machine tools and for limited construction required to start production at a minimum economic rate. PR-23 on Experimental Models has been amended, easing the requirements in

(*Continued on page* 132)

RESIDENTIAL AIR CONDITIONING

SECTION

THE ANSWER TO YOUR POST-WAR NEEDS!

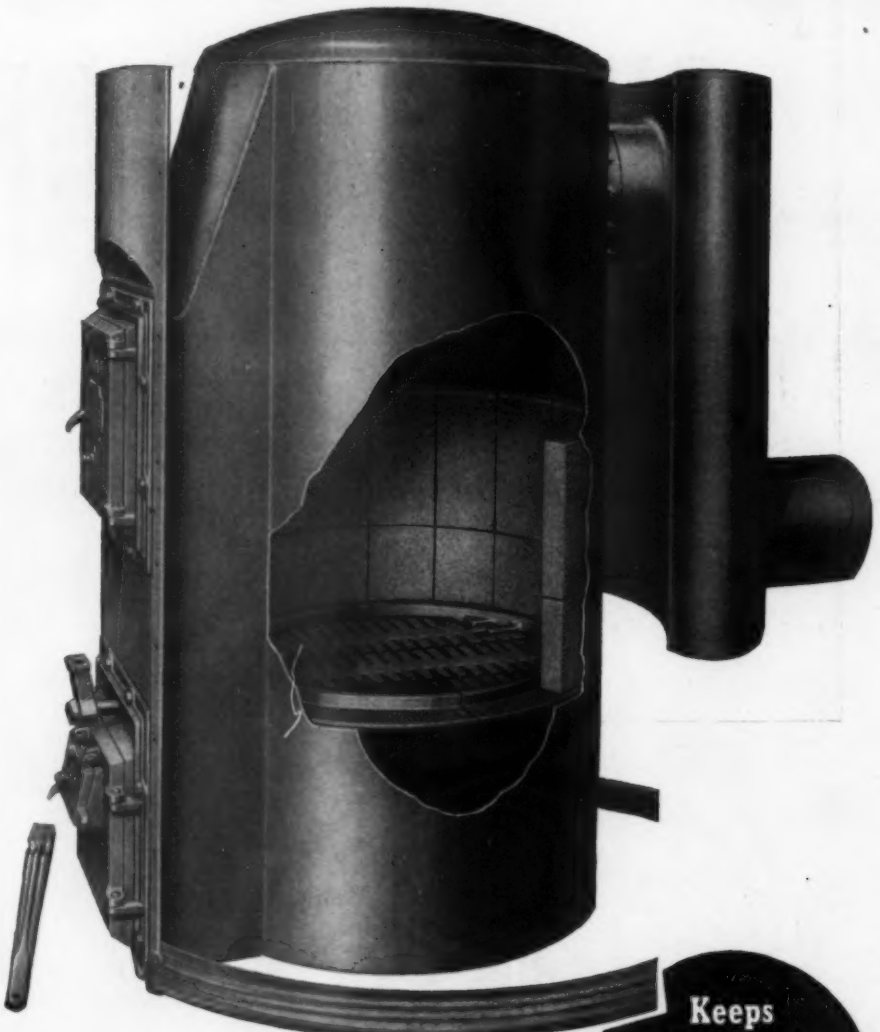
Waterbury

GASTITE FURNACE
Moderate in Price — High in Quality

NOW *is the time to make plans for your post-war business expansion.*

Due to present restrictions, we are unable to take care of any more new customers this year, but we are looking forward to the time when we can admit new members to our rapidly growing family of profit-making dealers.

SO we urge you now to *plan for a reliable source of supply in 1946.* Determine to build your business on the solid foundations which this quality line of merchandise will make possible.



Keeps Gases and Dust Out of the Heat Stream

REMEMBER the name WATERBURY

It's your guarantee of satisfaction and greater post-war profits.

THE WATERMAN-WATERBURY COMPANY
1122 Jackson St. N. E., Minneapolis, Minn.

This Manual *Guarantees* Vast Improvement in Forced Warm Air Results

By John W. Norris
Vice-President, The Lennox Furnace Co.

SECTION 7 of the new series of manuals of "Practical Warm Air Heating" is a genuine blessing to the entire warm air heating industry as well as to American home owners. It points the way to a vast improvement in the heating results produced with forced warm air. It has become available at a time when this industry is preparing to train thousands of new people in the installation end of the business.

Every furnace manufacturer, jobber and dealer will do well to thoroughly study Section 7, with particular emphasis on Section C on pages 14 and 15. If all dealers and installers will learn *and follow* the basic principles of installation and control outlined on these two pages, forced warm heat will do such a beautiful job for the American home owner that the going will be tough for steam, hot water and panel heating.

During the ten years prior to the war, business came into this industry in such lush volume that too many of us were inclined to be smug about the qualities of our systems. The steam and hot water installer was practically locked out of the market in better homes. Everybody wanted forced warm air. But we had no simple, sound and practical instruction manual to guide installers in this new type of heating. Engineering bulletins, resulting from our research at Urbana, did not provide practical answers to everyday heating problems. There was nothing in them that a dealer could grab and run home and fix a trouble job.

Likewise the many engineering schools conducted by manufacturers and various schools have concentrated on figuring heat losses and sizing pipes and registers. Here again the most important and most fundamental problem was missed.

The result is that too many forced warm air systems have produced results less than expectation. Room temperature has jumped up and down. Floors have been cold and drafty. Basement whoopee rooms and maids' rooms out over unheated garages have not heated properly. "Cold 70" has been admitted and widely discussed, but not enough has been done about it.

In some cases the public has accepted these results as inherent characteristics of forced warm air and automatic heating and have become interested in new forms of heating. Had our industry done before the war what we can do after the war, there would be very little interest today in panel heating, infra-red or radiant heating and circulating hot water. I know of many very large building contractors and architects who have made statements recently that all add up something like this: "Before the war 100 per cent of my homes were forced warm air heated. After the war 20 per cent will be forced warm air and the other 80 per cent will be some other type of heat."

We have no one to blame but ourselves for this condition. Fundamentally, forced warm air is the finest heating system known today for homes. It can produce a finer degree of overall comfort than any other system. Temperatures in all rooms can be held constant within a fraction of one degree. Drafts can be eliminated and floors can be warm all over. All rooms can heat evenly and constantly, regardless of their location. You have circulation and ventilation; humidification and partial air cleaning with simple filters. Postwar electronic air cleaning can be added inexpensively and it does a marvelous job. And last but not least, to what other type of a heating system can cooling be added so readily?

All of this can be accomplished very simply and at no more cost than the typical prewar job. It does not require a $200 set of automatic controls. Furnace-blower combination units as they were built before the war will do it with only minor improvements in the controls, but with a major change in the understanding of where to locate warm air registers, what type of registers to use, and how to set these controls.

The Fundamental Principle?

It all boils down to this: *No one will ever heat any home correctly without continuous circulation of the heating medium in all weather when there is any appreciable demand for heat.* This goes for hot water

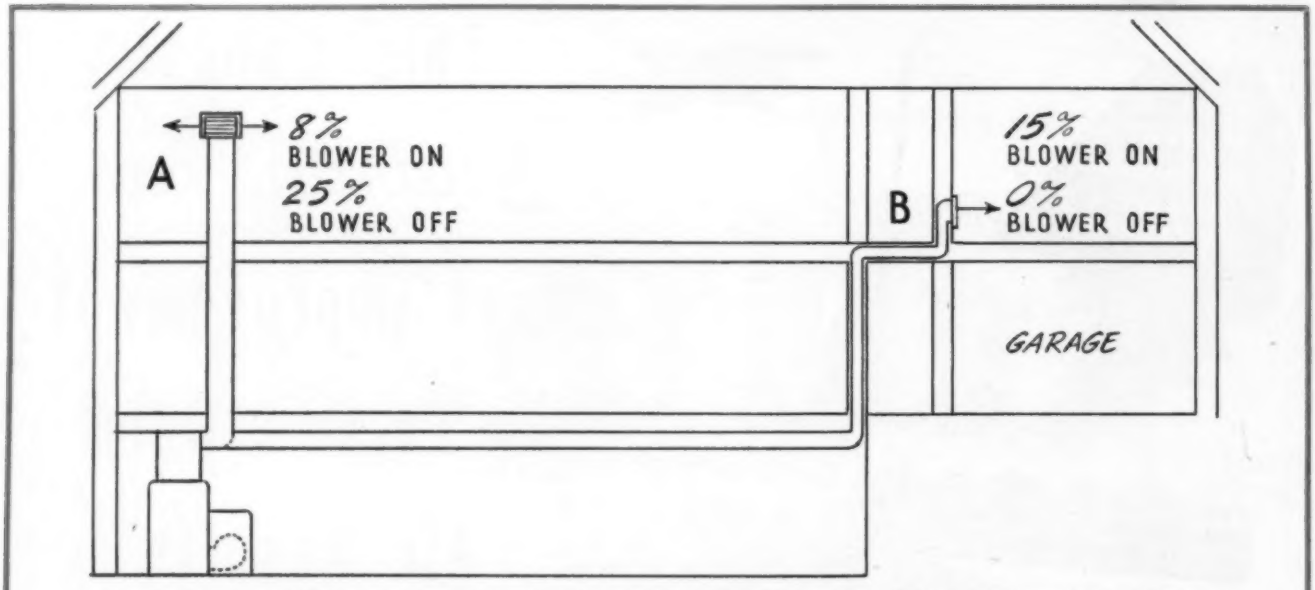


Fig. 1—Assume this house has a total heat loss of 100,000 Btu's with a 15,000 Btu loss from Room B and an 8,000 Btu loss from Room A. With duct sizes right and blower running constantly, and at constant speed, dampers can be set to deliver 15% of total heat at B and 8% at A. If blower stops, with any heat left in the furnace, delivery at B stops, but gravity flow continues to carry heat to A. With blower off you will then get approximately 0% of total remaining heat at B and perhaps as much as 25% at A. Bad balance is the inevitable result. If blower is merely reduced in speed, instead of being turned off, you might get 4% at B and 15% at A. Again you get very bad balance.

as well as warm air. The circulating hot water job that only lets the circulator run when the thermostat calls for heat has been a headache. The forced warm air job with the fan control set to start the blower at 175° and stop it at 150° has been a headache. Fundamentally, these systems cannot work right.

The blower in a forced warm air job should run continuously when the weather is colder than about 40° and a majority of the time in warmer weather. The moment the blower shuts off, the job becomes unbalanced. If there is any heat left in the furnace, this heat will be delivered by gravity to the nearest and highest openings. The distant registers get nothing and may even reverse and draw in cold air. Usually the rooms that cool most rapidly are the ones at the greatest distance from the furnace, so you have double trouble. You dare not shut the blower off until the weather has warmed to a point where there is practically no demand for heat. You don't need to be a heating engineer to know this, for it is just plain common sense.

Continuous blower operation keeps cold air drawn off the floor. A simple setting of the warm air dampers gives you the per cent of heat required in every room for even heating and you continue to get this same per cent of total heat from each opening so long as the blower continues *at constant speed.* Basement rooms heat the same as upstairs. That tough room out over an unheated garage heats beautifully. Ninety-five per cent of the furnace man's heating troubles disappear. But there are certain precautions.

Register Location and Type

When you run a blower as continuously as it must be run for proper results, the average temperature of the circulating air will be as low 100° in mild weather. At times register temperature will be as low as 80°. Air at these temperatures feels definitely chilly if it strikes a person at reasonably high velocity. Therefore, it is vitally important that warm air registers be located in such a way that the discharging air stream will lose its velocity before it ever strikes a person.

From a heating standpoint it makes little difference where the warm air registers are located *so long as the air stream can never strike a person directly.* The practical location is, of course, high in the sidewall in the majority of rooms. Here you should use the diffusing type of grille which will direct the air stream horizontally and diffuse it laterally so as to drop the velocity out of it before this air settles down to reach room occupants. Warm air registers can also go in the floor (where there is no objection to openings in the floor), or in the ceiling. It is also permissible to put registers in the baseboard or low in the sidewall, but great care must be exercised in so doing that you diffuse the stream and drop the velocity before it reaches an occupant.

There has long been quite an argument within the industry as to the relative merits of high and low sidewall locations. Some engineers think they have observed that floors are warmer with baseboard registers than with the high wall locations. It is true that if the floors are allowed to cool, which they will do during the off period of the blower, they will warm up more quickly when the blower does come on with low wall registers than with high wall locations. But the floors should not be allowed to cool. The blower should not be allowed to stop when there is any appreciable demand for heat. If the blower runs continuously, the floor will remain warm. Cold air is continuously being drained from them and active circulation is maintained in all parts of all rooms continuously. So you do not have a cold strata of air to be quickly warmed by a blast of hot air from a baseboard register.

The only place that baseboard or low wall registers are needed is where you have definite currents of cold air to be broken up. In houses where the second floor is maintained at a cooler temperature than the first floor you will get a current of cool air down the stairs. Here it is desirable to locate a low register to dis-

charge against the stairs to break up the descending cool air stream. Likewise if you have a leaky door it is desirable (where practical) to place a baseboard register to discharge against this leakage to catch and mix it with room air and prevent it from spreading across the floor. Where you have a very large expanse of cold glass it is desirable to put a warm air register in the floor below the window discharging upward to diffuse the descending cold air. But never locate a register where the air stream discharges directly into an area that might be occupied by a person sitting at rest. It is in this condition that people are most sensitive to air motion and temperature change.

Sensitivity in Controls Needed

The crudeness of old fashioned thermostats has been somewhat responsible for some of the crazy control hook-ups our industry has been using. Thermostats that required a wide temperature differential to operate them allowed long burner operating cycles, which resulted in bad temperature overruns after the thermostat was finally satisfied. In an effort to overcome the overrun, some controls were hooked up to stop the blower when the thermostat was satisfied. Results were terrible. Perhaps a 5 or a 10 degree overrun no longer showed on the thermometer, but many other troubles resulted. The heat remaining in the furnace delivered to some openings by gravity. These rooms stayed warm a long time while other rooms cooled rapidly. Usually the thermostat was in a room

Fig. 2—At A and B warm air discharges into space and loses its velocity before striking occupant. At C there is danger of air stream striking occupant before losing its velocity. Always locate warm air registers so air stream cannot strike occupant directly.

that stayed warm a long time so the burner and the blower stayed off for long periods. Floors got cold and the temperature balance from one room to another was completely upset.

The answer is a highly sensitive room thermostat; one that will only allow the burner to stay on for very short periods; 1½ to 2 minutes is sufficient with gas and 3 minutes is all right with a pressure atomizing oil burner if you have built the refractory pot of lightweight insulating brick or stainless steel. Frequent, short burner "on cycles" tends to modulate the temperature of the air that is being delivered constantly. This is the type of operation that brings about a constant comfort condition in all rooms.

Progress is being made by control manufacturers. After the war we will be able to buy inexpensive controls that operate on a fraction of one degree temperature change with some means of preventing excessive short cycling of the burner. Such controls will be demanded by everyone when people learn that perfect comfort can only be obtained when the heating medium circulates continuously. This means modulation of the temperature of the circulating heating medium, whether it is air or water. The effect of modulation can be obtained with an on and off burner if the control cycles this burner frequently enough. It is simple to build such controls so it is logical to expect that they can be had at very reasonable cost.

You will logically ask, "What about hand fired coal?" This, of course, presents another problem. In order to prevent overruns with hand fired coal, the furnace *must not be oversized for the house.* The ashpit and draft doors must be tight so that the fire will check completely when the thermostat is satisfied. The University of Illinois Engineering Experimental Station firing method must be followed. A barometric control should be used in the stack and the damper motor chain to the draft should only allow the draft door to open a small amount (¼ to ½ inch is adequate on most furnaces). In other words, the combination of the draft opening and the barometric control of stack draft should permit the fire to burn up to the furnace's stated combustion rate and no faster under a continuous demand for heat with the blower running constantly. The way most damper motor chains are hooked up to furnaces without barometric draft control, continuous demand for heat will allow the furnace to deliver twice rating in many cases. Such excessive fires make close room temperature control impossible.

Variable Speed Blowers?

Some heating men have attempted to correct forced warm air heating problems through the use of variable-speed or two-speed blowers. For gravity replacement jobs, where a blower has been added to an existing gravity furnace, using the old piping and registers, pretty good results can be obtained with the variable-speed or two-speed blower. Here you are operating the blower to approach the kind of variable circulation that you have in a good gravity system. Warm air registers are reasonably equidistant from the furnace and the use of the old gravity registers means that you frequently have baseboard registers that discharge on a davenport or easy chair. In such a case you can get more nearly constant circulation with a two-speed blower than you could stand with a single speed blower because the air stream from a register strikes a person before the velocity has been diffused and reduced.

But in new house work, or in replacement jobs where the new unit is connected to new forced air piping, two-speed or variable-speed blowers get you into balance trouble and should be avoided. The reason is obvious. Take a job where some warm air registers are perhaps 10 feet from the furnace while others might be 50 or more feet away. You will usually set the dampers to give the required heat distribution with the blower running at high speed. This setting gives you a certain per cent of the total available heat out of each register.

Now when the blower drops to low speed you completely upset the per cent of total heat that is delivered from each opening. At low speed the nearer openings get a larger per cent of total heat than the distant openings because the gravity effect on circulation is greatest on the nearest and highest openings. Furthermore, reducing velocity in the ducts gives the air

more time to cool in traveling through long ducts, so you not only lose more velocity but you also lose more temperature, percentagewise, at the distant openings than at the nearer openings. So you cannot maintain an equal balance of temperature from one room to another when the blower speed changes on this kind of a job.

I was discussing this problem the other day with a dealer who is fairly new in our organization. As I do with all of our dealers, as the opportunity presents itself, I began outlining this principle of continuous blower operation at constant speed. He told me that he realized that this principle of operation was right, but that it did require a rather drastic change in his thinking on the subject. He told me that for quite a while he had been very much sold on two-speed or variable-speed blowers. I then asked him if he had ever had balance trouble with such a system. His answer was a simple, "God, yes!" He then went on to describe his experience with a typical job recently.

It seems that this job had a maid's room out over an unheated garage and a basement recreation room. When he heard of a new variable speed blower pulley, automatically actuated from bonnet temperature, he thought it would be a fine improvement on this job. So he installed it. The next morning the phone rang and the home owner complained that the maid's room and basement room were cold. So the dealer went on the job himself. He spent two solid days trying to obtain a damper setting that would maintain proper temperatures in all rooms. He found it impossible. So he ended up by going back to the single speed blower, running continuously when there was any appreciable demand for heat, and had an excellent job.

So the answer is single speed blower operation on all jobs where the warm air openings are not equidistant from the furnace. Pay particular attention to the warm air register location and type in the living room, den and dining room. It is in such rooms that people are at rest and where they are most sensitive to air currents and temperature change. In other rooms it does not make as much difference where the registers are.

Section C Important

In the new manual Professor Konzo has done a wonderful job of working out comparatively simple tables for sizing pipes as correctly as engineering science makes possible. All the necessary factors are included in the development of these tables. The resulting piping system will require a minimum of damper setting for the desired distribution.

But even this perfect piping system falls short of expectations if the blower is not run continuously enough. On the other hand, a forced warm air system is extremely flexible. You have dampers in every branch. A very slight adjustment of the dampers makes a big difference in the amount of heat delivered to the various openings. The piping system does not need to be perfect. You still have dampers to adjust for the required distribution so long as pipe sizes and resistance do not vary too much from theoretical perfection.

Too much time has been spent in engineering schools for warm air heating contractors on designing duct work. I know of one very popular school where days are spent in teaching the fine points of duct design, but nothing is said about how to set the blower control and how to control the burner. Such schooling is a waste of time because the vitally important thing in this work has been missed completely. Comparatively simple and very much standardized piping will do a perfect job of forced warm air heating when registers of the right type are located properly so that the blower can run continuously when there is any heat loss from the house.

So this is why Section C of Section No. 7 of the new manual series is the most important single part of this whole instruction course. *Without it no amount of fine duct design would heat homes properly.* For the first time our industry has taken a definite stand on this vitally important subject. The fundamental principle is clearly stated. Definite rules are specifically set forth. This manual *teaches* forced warm air heating as no other instruction book ever has.

When this industry begins designing piping systems according to the rules outlined in this manual and locating registers and operating blowers as instructed, comfort results produced by forced warm air will be so superior to all other types of heating systems that a new era will develop for the warm air heating industry.

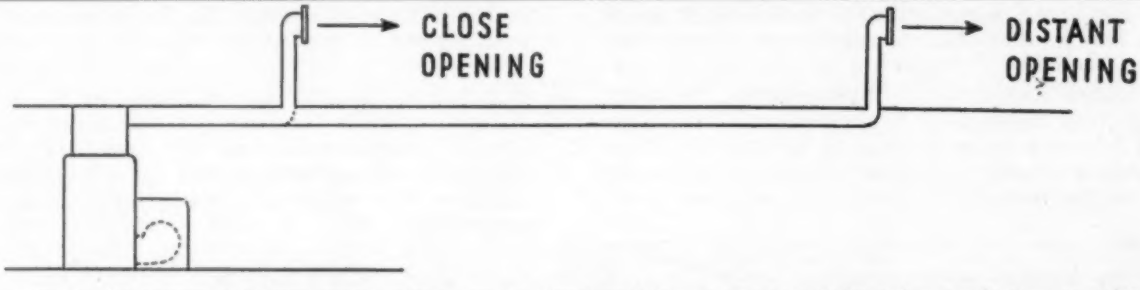


Fig. 3—At constant blower speed, pipes can be sized and dampers set to deliver the required percent of total heat to each opening. When the blower slows down, velocity reduces in long runs a greater percentage than in short runs. Reduced velocity in long duct increases heat loss from this duct. Reducing blower speed upsets temperature and velocity proportion available at the close and distant openings.

What About Power Cost?

Many dealers have been afraid to run blowers continuously because of power cost. This is largely a matter of how the job has been sold. Bear in mind that under continuous blower operation the blower should be operated *slowly*. It is much better to have three or four air changes continuously than to have air delivered at the rate of six air changes per hour with a blower that only operates half the time. Ventilation per hour is about the same in either case, but heating and comfort results are vastly different.

We find that the average blower speed setting, as adjusted by a dealer who has been setting fan controls high so as to operate the blower intermittently, is

(*Continued on page* 121)

Readers are invited to contribute their experiences or suggestions to the topics under discussion. On this topic, suggestions from associations or heating inspectors are especially invited.

OPEN for DISCUSSION

Are State-wide Heating Codes a Good Idea?

DURING the last several months a substantial number of requests have been received from AMERICAN ARTISAN readers who state that a heating code is under consideration in their area. Most of these requests ask for copies of existing city heating codes to be used as a guide in drafting the ordinance.

Up until a few months ago our procedure was to suggest codes like the one in Minneapolis which is very complete, or codes like those in Toledo or Dayton, Ohio, which are simpler.

But now AMERICAN ARTISAN is urging all such communities to give careful consideration to the *new ordinance form* of our industry's "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" for all forced air work and to wait a few weeks until the *new ordinance form* of our industry's Standard Code Installation Manual is completed.

It is assumed that most readers of AA know the purpose of these two installation manuals. In brief, they are *precalculated* design methods intended to eliminate all unnecessary engineering calculation, but to assure an installation which meets fully our specifications of a satisfactory job.

The ordinance forms of these manuals instead of going into detail on every point of engineering design, simply state that the installation shall be designed and installed in accordance with the two manuals. The contractor, under this procedure, designs and installs according to the manuals, and the heating inspector has in tables and drawings all the data needed to check the installation for compliance.

Advantages Cited

But the purpose of this "Open for Discussion" is to take a look at another development which is coming up for consideration. This development is the interest in *statewide* heating codes.

Two principal arguments seem to be offered for a statewide heating code:

(1) If a heating code is helpful to the city home owner, why not a code for the owner who lives in the small town or on a farm or in a suburban development.

(2) Most heating codes in use apply only within that city's limits. Since most new home construction is anticipated outside city limits, the city code does not apply and suburban owners do not enjoy code protection.

When statewide codes were first proposed a few years ago, AMERICAN ARTISAN was inclined to "go along" with the sponsors and accept the two benefits listed above. In reports on code operation, AA cited the experience of such cities as Minneapolis, where officials and others expressed the opinion that suburban communities would, with a little pressure, adopt a code—probably the same code used in the city. However, as the years have gone by we find few suburban communities have actually gotten around to adopting a code.

If the idea of a statewide code has any merit, AA now feels that this whole matter should be discussed and considered in detail before this industry places its stamp of approval on the idea. This is the opening discussion—you are invited to express your opinion.

Problems and Objections

In considering a statewide code, these problems are worth study:

(1) *The matter of cost.* Take, for example, the state of Illinois. In 1940 there were almost 600,000 furnaces in use. That's just over 8 per cent of all the furnaces in use in the country. In a medium fair year when 350,000 furnaces were produced, some 48,000 furnaces would be installed in Illinois.

Experience of city inspectors shows that three or four furnace inspections per day is about all one inspector can make. If an inspector works at inspecting 300 days in a year, he can inspect 900 to 1,200 furnaces in a year. This is inside a city. Probably on farms and small towns and suburban communities 900 inspections a year would keep one inspector pretty busy.

Therefore, in just a "fair" year some 55 inspectors would be needed in Illinois *on new house work only.*

But most city codes—so statewide codes would also—cover repair and replacement jobs. A repair or replacement might not take as much time as a new job and certainly would need only one trip in place of two or three needed in a new house, but there surely will be at least five repairs or replacements for every new installation, so, on that basis, an additional 200 inspectors would be needed.

Now an inspector to be worth his salt surely is worth $2,500 a year salary, and it takes about $1,500 a year for transportation, so each inspector costs

$4,000 and 255 inspectors would cost Illinois well over one million dollars a year.

Of course, any good city heating code is self-supporting—Minneapolis even shows a profit. So a statewide code ought to be self-supporting also, but we wonder if it will be. Any organization of 200 or more men needs considerable "overhead" in the way of office and clerical help, "chief inspectors"; state coverage means long miles of travel and days with usual expense but meager income. This adds up to the possibility that a statewide code might not be self-supporting.

(2) *Need trained men.* Assuming that design and installation of warm air furnaces is a technical business, it follows that a good inspector should also be a good technician. Taking a butcher off the block and sending him out to inspect heating plants might work out after a couple of years of education, but it would be much safer to have a heating man.

Where, then, in the post war era, when any good heating man can make a handsome living selling warm air furnaces, can a state like Illinois hope to find 250 good heating men to work as inspectors at $2,500 a year?

Of course, we will admit that an intelligent man, armed with our industry's two new simplified manuals, ought to learn proper from improper in short order, but experience in cities with heating codes shows that the installation which causes trouble is the system which departs from customary practice yet may be perfectly designed. To pass judgment on such a system calls for knowledge "outside the book."

Too Much Regulation Now

(3) *Too much regulation.* Four years or so ago when statewide codes were first discussed, we did not have the first hand experience with government in business we have been deluged with since the war began. Most industries and most business men certainly, today, want less of government in business. Especially when the arrangement has the slightest possibility of becoming a political racket.

City heating ordinances, so far as AA knows, have had unusually clean hands in this respect. Heating departments and heating inspectors of our acquaintance are unusually high principled individuals and seriously concerned in seeing that home owners get the best possible installation.

But principles which are under constant observation by many installers might be slacked off where jobs are far apart and little noticed, as might be the case in a statewide code. Also, the larger the organization the greater the chance for misfits or inconscient inspectors, all of which opens the way for poor supervision and political fumbling.

The possibilities of being saddled with political racketeering should be examined carefully before statewide codes are urged.

Should Repairs Be Inspected

(4) *Should repair work be inspected?* Serious consideration should be given the matter of including repair work and replacement under a statewide code. The question is: if a repair is made, must the whole heating system meet the provisions of the code before the inspector can approve the repair work? Or if a gravity furnace has operated satisfactorily for the owner but has worn out and must be replaced, must the whole system be revamped to meet the code to be approved, even if the owner was satisfied with his old system?

If repairs and replacements are to be included, what is a repair? Is a set of grates or a firepot section a repair calling for an inspection?

In favor of including repairs under a code are those who would use the code to stamp out the shyster repair practices we hear so much about. Rightly, these shyster practices are putting a black eye on the whole warm air heating business. One idea advanced is to draw a line between repair and replacement so that all repair work would be free of inspection, but whenever a replacement is made, inspection must follow. Another suggestion is to make a straight replacement free of inspection, but a modernization job be subject to inspection. Replacement without inspection throws the door wide open to those who scare the owner into a replacement when a repair would do.

These questions of limitations are not as acute in a city code as in a statewide code because a repair inspection requiring a few minutes can be sandwiched into an inspector's route, but out in the country one repair might constitute an inspector's entire day's work.

(5) *Owners circumvent code.* The plumbers in some areas have found that plumbing codes make for sales over the counter, from the mail order houses, from the DTU's, and cost the plumber many sales of accessory equipment which the owner buys and tries to install in order to avoid the code. We might find a statewide code causes much the same result in warm air heating.

These, in brief, are the pro's and con's of the statewide code argument. AMERICAN ARTISAN hopes that this discussion will serve to arouse comment from readers who have experience or beliefs in the matter. Write us so that the whole matter can be thrashed out before the post war building boom.

Air Duct Friction Studies

THE subject of air duct friction will be a major study at the Research Laboratory of the American Society of Heating and Ventilating Engineers, Cleveland, Ohio, under the direction of the Technical Advisory Committee on Air Distribution and Air Friction.

Since any practicable set-up for testing the friction of ventilating ducts is limited as to sizes of ducts which can be tested, and velocities which can be reached, such tests as were made in the past have been generally restricted to conditions in the lower portion of the friction chart. This limited range of results leads to an equation which can be greatly in error if extrapolated sufficiently to include the range of the usual friction chart.

Friction charts now in general use tend:

(1) To give friction values too low in the upper range if satisfactory in the low range, or too high in the middle if satisfactory at top and bottom.

(2) To over-emphasize the effect of change of diameter in the low velocity range.

(3) To under-emphasize the effect of change of diameter in the high velocity range.

The tests will cover:

The Committee recommended that a tentative fric-

(*Continued on page* 120)

Charts for Estimating

Temperature Drop in Ducts*

THE experimental data obtained in this investigation established the validity of equations for the calculation of the coefficients of convection for the inside and outside of ducts of various sizes and shapes. These equations were, therefore, utilized to calculate the temperature drops, and to construct estimation charts applicable to the range of shapes, sizes, and lengths, of uninsulated, galvanized-iron ducts commonly used in forced-air heating practice.

Curves showing the temperature drop per foot of length in a basic section of 20 feet with air flowing at an average velocity of 400 feet per minute and with various temperatures for the air entering the duct are presented in the upper part of Fig. 9. On plotting similar curves for a large number of sizes and shapes of ducts it was found that the round, square, and rectangular ducts could all be represented by the same set of curves, provided that the characteristic dimensions of the cross section was expressed as an equivalent diameter, numerically equal to four times the mean hydraulic radius. "Hydraulic radius" is defined as the ratio of the cross-sectional area to the length of the perimeter. For a round duct the equivalent diameter is the same as the actual diameter. For a square duct the equivalent diameter is numerically equal to the length of the side of the square, and for a rectangular duct having a width a, and depth b, the equivalent diameter is equal to $\frac{2ab}{a+b}$. Curves covering a range of equivalent diameters are given in Fig. 9.

By plotting similar curves for different velocities of the air flowing in the duct it was found that separate sets of curves were not necessary since the curves for any given velocity could be derived from the ones for 400 feet per minute by the use of velocity conversion factors. The curve for these velocity conversion factors is shown in the lower part of Fig. 9. For velocities other than 400 feet per minute the temperature drop may be obtained by multiplying the temperature drop read from any one of the upper set of curves by the proper velocity conversion factor read from the conversion factor curve.

It may be observed that, for a given velocity, the rate of temperature drop increases as the equivalent diameter of the duct decreases, and for a given duct the rate of temperature drop increases rapidly as the velocity decreases. Furthermore, although with a given entering air temperature the temperature drops are the same for ducts of different shapes having the same equivalent diameters, the total heat losses will be different as a result of differences in surface area. Also, at a given velocity of flow the weights of air carried by ducts having the same equivalent diameters will be different.

The curves in Fig. 9 are general and can be used to compute the temperature drop in any given length of duct by regarding the total length as made up of a succession of 20 foot sections. This method, however, is not convenient for rapid estimation, and for this purpose four sets of curves covering the range of air velocities, air temperatures, and equivalent duct diameters used in small heating installations are given in Figs. 10 to 13. These curves are derived from the ones in Fig. 9.

An initial air temperature of 200 deg. F. was selected as a reasonable maximum, and in each case the

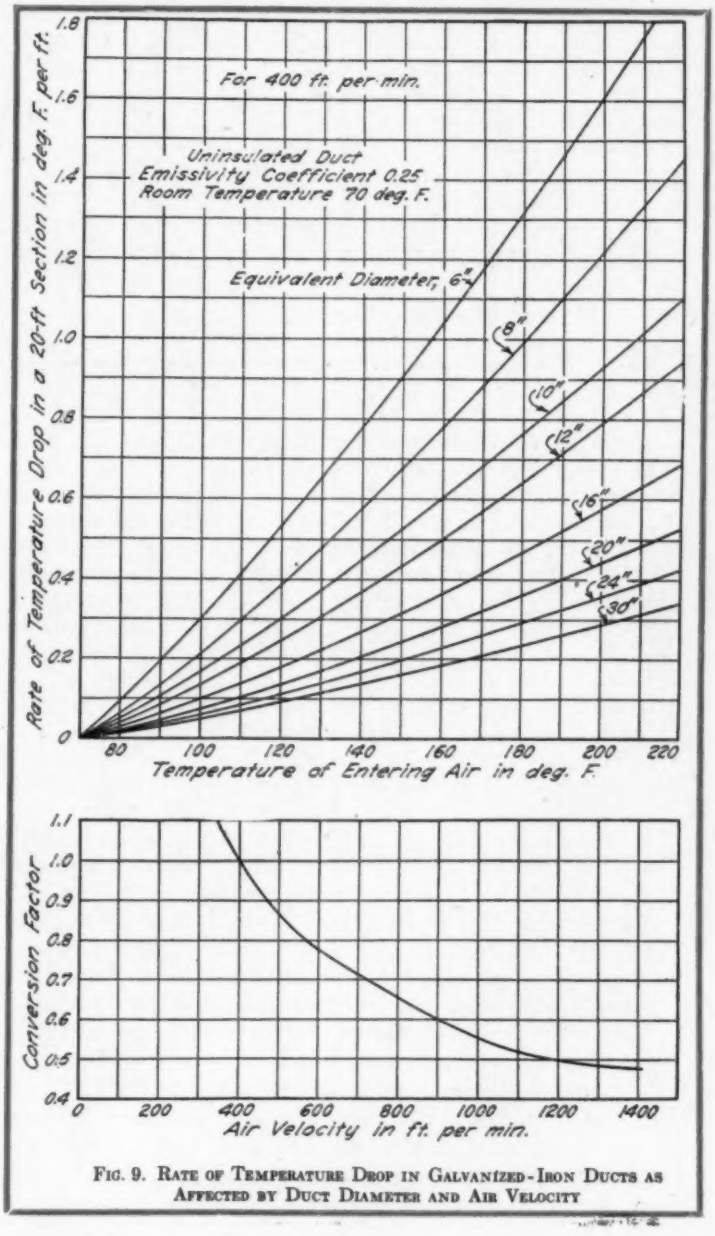


FIG. 9. RATE OF TEMPERATURE DROP IN GALVANIZED-IRON DUCTS AS AFFECTED BY DUCT DIAMETER AND AIR VELOCITY

*From Bulletin 351, Engineering Experiment Station, University of Illinois.

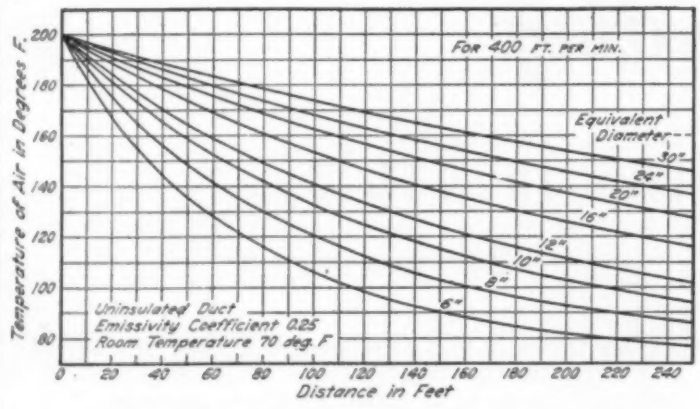


FIG. 10. TEMPERATURE DROP IN DUCTS FOR AIR VELOCITY OF 400 FEET PER MINUTE

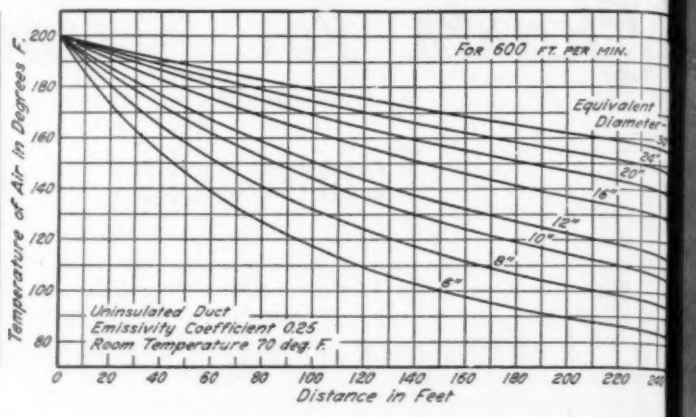


FIG. 11. TEMPERATURE DROP IN DUCTS FOR AIR VELOCITY OF 600 FEET PER MINUTE

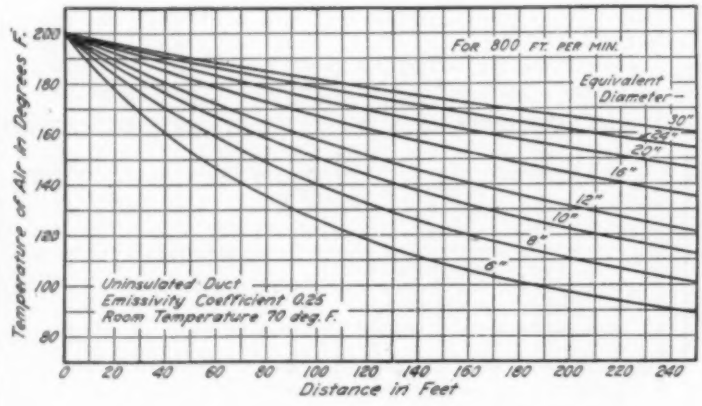


FIG. 12. TEMPERATURE DROP IN DUCTS FOR AIR VELOCITY OF 800 FEET PER MINUTE

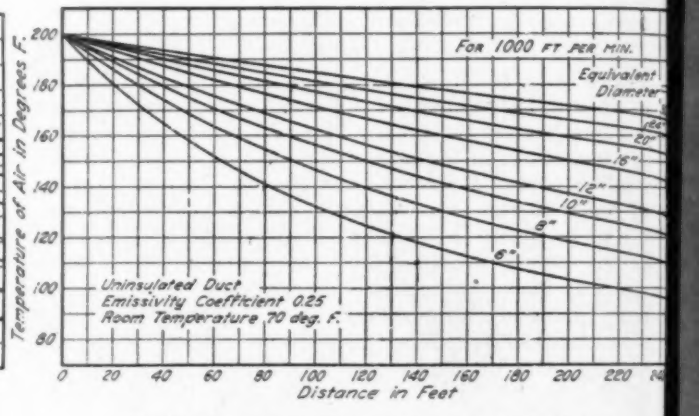


FIG. 13. TEMPERATURE DROP IN DUCTS FOR AIR VELOCITY OF 1000 FEET PER MINUTE

temperature drops were computed for lengths up to 250 feet. The total length was regarded as being composed of a succession of 20 foot sections joined end to end. For a given air velocity and given equivalent diameter, the temperature drop in the first 20 foot section with air entering at 200 deg. F. was obtained by reading the rate of temperature drop from the proper curve in the upper part of Fig. 9 and multiplying it by velocity conversion factor from the lower part of Fig. 9 and multiplying the result by 20. By subtracting this temperature drop from 200 deg. F. the temperature of the air leaving the first section and entering the second was obtained. The rate of temperature drop for the second section was determined by this initial temperature, and the temperature at the end of the second section could then be obtained. This procedure was repeated for each successive 20 foot section until the total length of 250 feet was covered. Starting with the entrance of the duct and a temperature of 200 deg. F as the origin, the temperature at the ends of the successive 20 foot sections were plotted against the distances of the section from the entrance of the duct, as shown in Figs. 10 to 13.

The use of the charts for estimating the temperature drop is shown by the following examples:

(1) The temperature drop in a 45 foot length of uninsulated, round, galvanized-iron duct having a diameter of 8 inches is desired. The air enters the duct at a temperature of 180 deg. F and the velocity of the air flowing is 800 feet per minute.

The equivalent diameter of round duct is the same as the actual diameter, in this case 8 inches. From the curve for 8-inch equivalent diameter on the chart for 800 feet per minute velocity (Fig. 12) it may be observed that an initial temperature of 180 deg. F. corresponds to a section at a distance 24 feet from the origin. At a distance of 24 + 45, or 69 feet from the origin, the air temperature is approximately 154 deg. F. The temperature drop is, therefore, 180 — 154 or 26 deg. F.

(2) The temperature drop in a 45-foot length of uninsulated, rectangular, galvanized-iron duct 20 inches wide and 8 inches deep is desired. The entering air temperature is 180 deg. F. and the air velocity is 800 feet per minute.

In this case the equivalent diameter is $\frac{2 \times 8 \times 20}{8 + 20}$ or 11.4 inches. The temperatures for this diameter of pipe can be obtained by interpolating between the curves for equivalent diameters of 10 inches and 12 inches. For a velocity of 800 feet per minute an air temperature of 180 deg. F is attained at a distance of about 35 feet from the origin. At a distance of 35 + 45, or 80 feet, from the origin, the air temperature in the duct is about 161 deg. F. The temperature drop in the 45-foot section in this case is 180 — 161, or 19 deg. F.

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Designing Duct Work for Exhaust Systems*

WHERE the plant layout will permit, the fan and dust collector should be located at a central point, with main and branch ducts radiating to the various sections served. Equipment to be exhausted should be so arranged that in so far as possible, short or large diameter branches are at the extremities of the duct system, while long or small diameter branches are near the exhaust fan.

With scattered processes it is often advisable to separate the equipment to be cared for into several compact sections and provide a separate exhaust fan and duct system for each section. This arrangement of individual systems usually reduces the full load power consumption and also increases the flexibility of the plant. Processes that are normally operated in conjunction with each other should be included in a single group, and if there are a few machines which are much in use they can be tied into two separate duct systems with blast gates arranged to throw the load to either one as dictated by the plant operations. Multiple exhaust systems may be served by individual dust collectors or one large collector may take care of several systems. In the latter case back pressure valves (Fig. 1) must be provided in each duct system to prevent back flow of air when one or more systems of the group are shut down.

*This is part 5 in the series issued as Bulletin No. 2, under the auspices of the Preventive Engineering Committee, Air Hygiene Foundation of America, Inc.

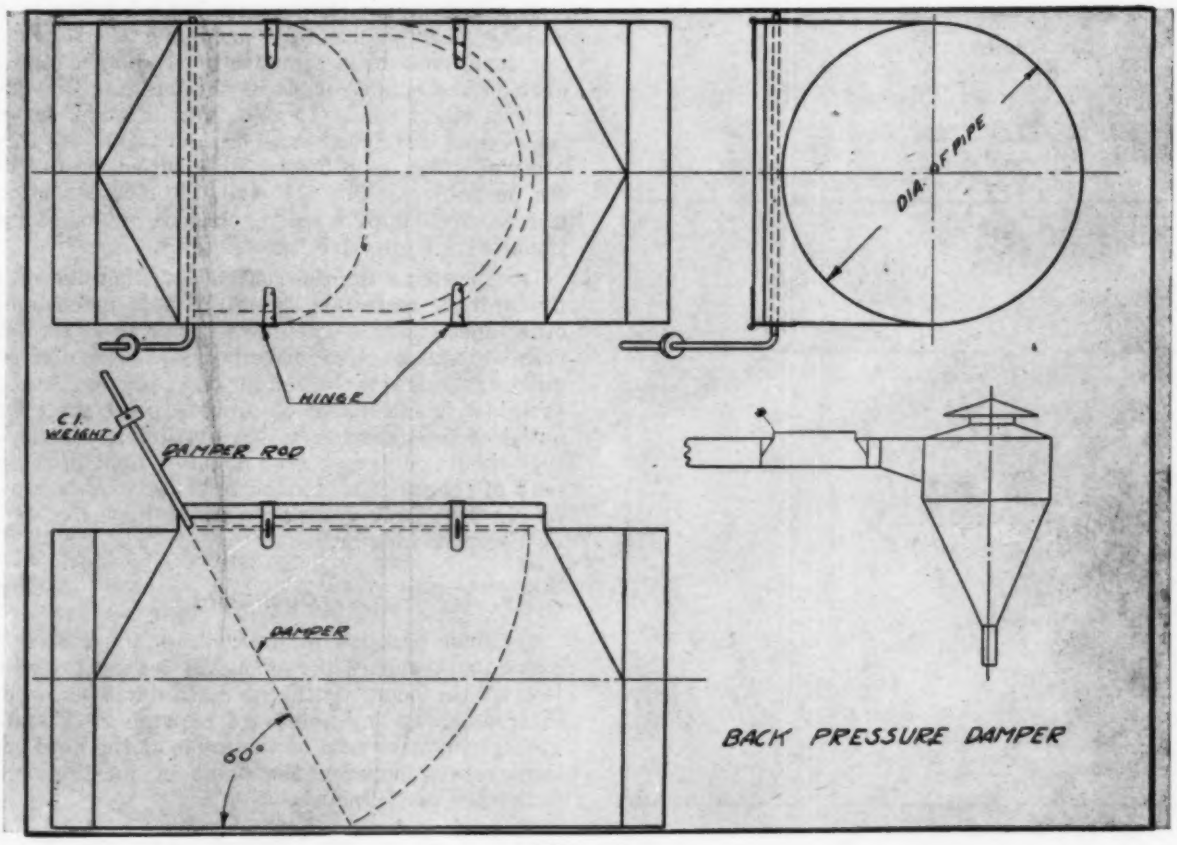


Figure 1.

This large dust collector, which takes care of a multiple exhaust system, must be provided with back pressure valves in each duct system.

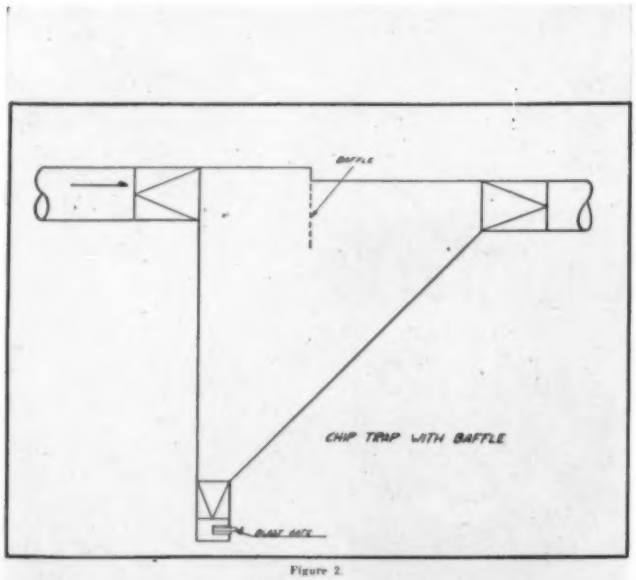


Figure 2.

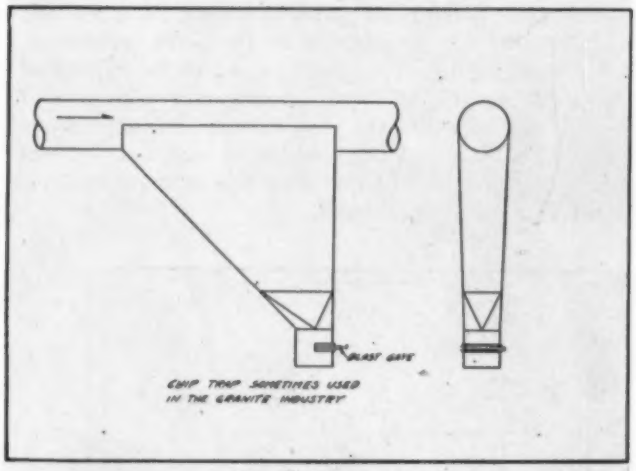


Figure 3.

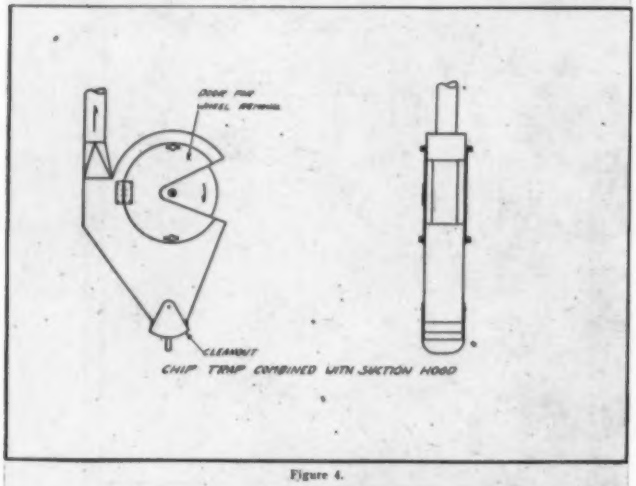


Figure 4.

Ducts should be located so that they are readily accessible, do not interfere with free access to the equipment served, or the operation of cranes, conveyors, elevators, trucks, etc., and where they will not be subject to injury by cranes, trucks, or other moving equipment. Locations conducive to the condensation of moisture inside the ducts are to be avoided. Underground duct locations are also to be avoided. Ducts should be spaced at least six inches above floors, where possible, and overhead ducts should be located close to the ceiling above.

Chip Traps in Branch Ducts

Where large chips or heavy pieces of solid material may be carried along with the air stream into the duct system, it is advisable to install chip traps in the branch ducts, or such traps may be combined with the suction hoods. Chip traps which depend on expansion only for their effectiveness should have a cross sectional area of at least eight times the area of the ducts served. The automatic dumping type of trap is not recommended due to danger of excessive air leakage. (See Figs. 2, 3, 4 for illustrations of various types of chip traps.)

Ducts supplying return or replacement air should be located so that they do not cause excessive air motion near hooded processes. Return air ducts should also be arranged so that the workmen are not subjected to drafts of cold air.

Buffing and grinding wheel duct systems should be segregated, as sparks from the grinding wheels may set fire to the lint and grease from the buffing operation if both are carried through the same duct system.

Avoid Fire Walls

The duct layout should be arranged so as to avoid passing through fire walls or important floors. This can sometimes be accomplished by placing the main duct on the outside walls of the building. Frequently vertical risers can be located in stair wells. Insurance regulations require that where ducts do pass through fire walls they be provided with automatic fire dampers on both sides of the wall. (For construction details of fire dampers see regulations published by National Fire Protective Association.)

Duct systems for the removal of explosive or readily ignitible materials should be kept independent of other duct systems. The ducts should be as straight as possible, should lead directly to the outside of the building and never through other rooms. Automatic sprinkler heads should be provided near the inlet and outlet of the duct system. If installed inside the ducts they should be placed in an offset and not in the direct path of the air flow. Explosion relief vents are usually required on duct systems handling explosive or readily flammable materials.

Duct Sizes

Common practice in determining duct sizes is to make the branches the same size as the throat openings at the hoods, with the main ducts so sized that their areas at any point are between 20% and 25% greater than the sum of the areas of the hood connections served between the point in question and the dead ends of the mains.

The sum of the areas of the hood connections is known as "load area" and on the basis of the above rule branches are made equal in area to the load area which they serve. Sub mains and mains are sized so

that at all points their areas are between 20% and 25% greater than the load area served.

Since floor sweep ducts are used occasionally and for a few minutes at a time, they are not included in computing the load area or the size of the main ducts.

The method described of sizing the branches and mains in accordance with the load area is a development from certain state codes which specify the size hood connections and the minimum static suction at the hood connections for a given condition. These codes also limit the minimum duct sizes so that their area shall be not less than the connected load area, and for certain conditions they require areas 20% greater than the connected load area (New York State code requires 20% excess area in main ducts on systems used for removal of dust created by grinding, polishing, and buffing wheels). Usually the minimum static suction required at the hood connections is two inches of water. On the usual exhaust system where the average restriction coefficient at the hood connections is taken as 0.7 and the ducts are sized on the basis of branches equal in area to the hood connections, with mains 25% greater area than the load area, the air velocity in the branches is 3960 ft. per minute and in the mains 3170 ft. per minute. These velocities are sufficiently high properly to transport the dust and small particles collected by the exhaust hoods in metal grinding, buffing, and similar applications.

Improved operating efficiency and lower power consumption can be obtained by sizing the branch and main ducts so that they comply with the following basic requirements:

(1) Area at each duct section should be such that the air velocity is not less than the minimum velocity required to carry the material exhausted from the hoods.

(2) Maximum air velocities in branch and main ducts should exceed the minimum transport velocities only by the amount required to obtain even pipe sizes, with the exception that they should be increased in certain branches to obtain balanced suction at the hoods as stated in paragraph 3.

(3) In order to obtain balanced suction at the hoods the pressure drop produced by the air flowing in any branch line should equal that obtained in that part of the main duct and branches which lies up-stream to the branch under consideration.

Method of Determining Pressure Drop

The flow of air in a duct gives rise to friction which results in a pressure drop which is dependent upon the straightness of the duct, its smoothness, and perimeter. The pressure drop in *straight round* galvanized iron exhaust ducts, as usually constructed, and when handling air at standard density, can be determined with sufficient accuracy by means of the following empirical formula:

$$P = \frac{L \times V^2}{66.6\, d\, (1000)^2}$$

P = Pressure drop in inches of water
L = Length of straight duct in feet
d = Duct diameter in inches
V = Velocity of air flow in feet per minute

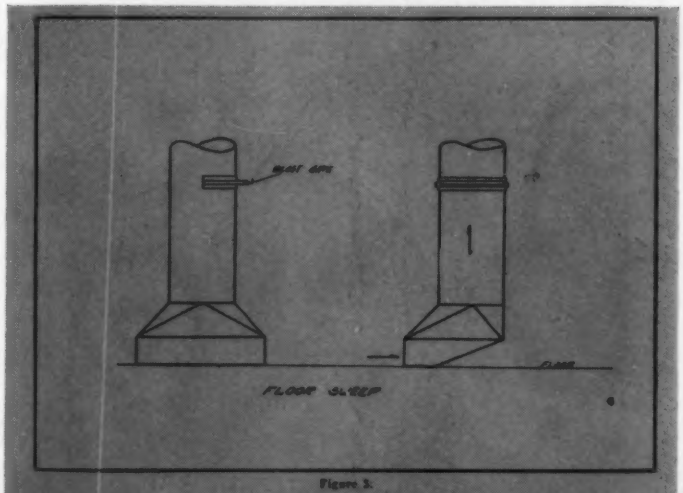


Figure 3.

Floor sweeps should be equipped with tight fitting blast gates.

Experience has shown that this simple formula works well in practice and that, ordinarily, there is no advantage in using more refined and complicated formulas, as any possible gain in accuracy is offset by the effect of unknown variables, such as, variations in dimensions and smoothness of the ducts, air leakage, etc.

For rectangular ducts the pressure drop is increased by the ratio of the perimeter of the rectangular duct to the perimeter of a round duct of equal area.

Pressure drop in elbows is most easily allowed for by adding to the straight duct, before figuring the friction in same, an additional length to cover loss in the elbows.

For each elbow having a center line radius equal to one half the pipe diameter, add to the straight pipe a length equal to 38 diameters of length. For radius equal to pipe diameter add 13 diameters of length and for radius twice the duct diameter 8 diameters of length.

Abrupt expansion at chip traps introduces pressure

(*Continued on page* 115)

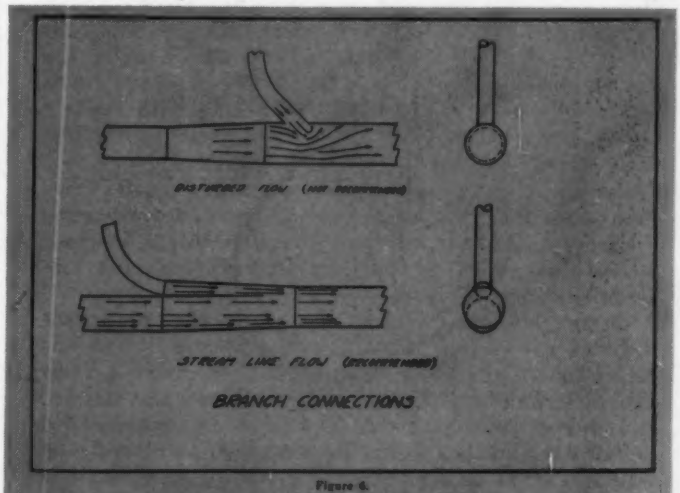


Figure 4.

All branches should join the main gate at an acute angle.

Heavy Gauge Sub-contract War Products

Tack welding top support angle to heat treating furnace shell. Clayton rolls the ring and the shell and assembles over wood templates. After tacking a continuous bead is laid.

SINCE 1902 the Frank B. Clayton Company of Philadelphia has been fabricating heavy gauge material for local contractors and jobbers without the proper power equipment and manufacturing numerous metal products (AA, Aug., 1937) which require power machinery. Sub-contract war work in the last three years has increased the demand for Clayton service and many interesting items have come from the shop. To meet the demand for sub-contract war work, Clayton has been adding to its facilities—carborundum saw, heavy rolls, circle shear and flanger, punch presses, and heavy gauge nibblers are just a few of the new machines added.

Last year photographs were taken of three items typical of war work—a heat treating furnace body, a casing for a plane heater, and a double jacketed, uniform delousing tank.

Certain characteristics are common in all these items—the body is heavy gauge steel or stainless; there are rings and circular angles to be formed; pieces are joined by butt or lap welding and sub-assemblies are welded and attached by welding.

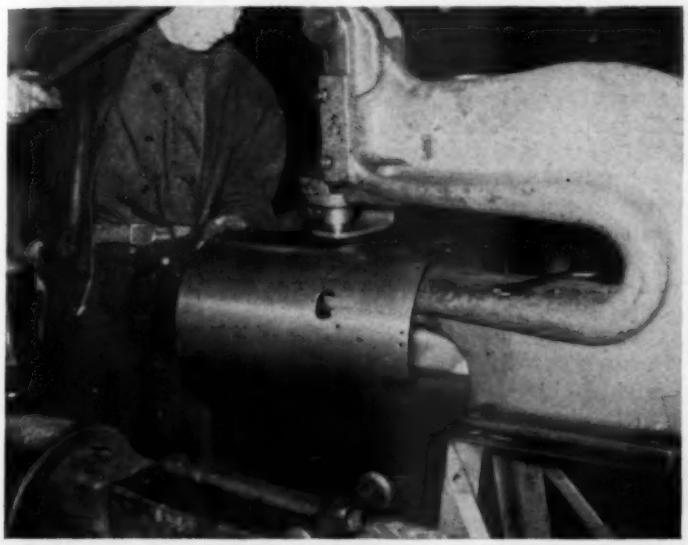
Three photographs show the heat treating furnace body. Clayton rolls the 14 gauge sheets. Then the rolled sheets are assembled over a built up wood form and tack welded. A set-in bottom is cut and flanged and welded into the body. The cover is double-walled (filled with insulation by the customer) and stiffened with angles as shown. A 2½ by 2 by ¼-inch angle is rolled to fit outside the body with the leg flat to form a seal for the cover and butt welded. This ring was held in place with clamps while tacks were placed

Looking into furnace—note top ring. Cover (left) is stiffened with angles and is constructed double-walled to take insulation.

This fixture and outside template were made to mark the plane heater shell for punching. Template is clamped over shell. Fixture provides a substantial anvil.

At right is an army uniform delousing tank—double-walled with insulation; inner shell stainless steel, outer wall carbon steel. All material rolled and welded by Clayton.

Below—After notching in the flat and marking through the template, the holes are punched in this large hand punch. Dies for notching can also be used.



around the bottom of the ring to position it; then the clamps were removed and a continuous weld was laid around the ring and body. Necessary holes are cut in the flat and accessories are attached by welding both in the flat and in sub-assembly.

On the plane heater casing, Clayton was a subcontractor for the notching, punching, and assembly, but let out the rolling, flanging and seam welding to another Philadelphia fabricator. The body is 26 gauge steel. After Clayton punched and notched and assembled the casing, it was sent out to still another shop for cadmium plating. The photographs show the template prepared by Clayton to position the holes and notches and the large punch which was equipped with special dies for the notching and standard dies for the punching.

The stainless steel (12 gauge, 18-8, Type 402) delousing tank is constructed pretty much like the heat treating furnace. The body is rolled and welded by Clayton; the top channel is rolled and welded. The tank has an outer body of 10 gauge carbon steel formed by Clayton. For this item the material and the welding rod (stainless) were furnished by the customer.

Army-Navy Termination Regulation (*Continued from page* 61)

tractors may promote prompt settlement of termination claims by similar advance planning with their subcontractors. A form of pretermination settlement agreement is included in the revised Regulation.

Authorization to Settle Claims

Under the JTR prior to its amendment certain war contractors were authorized to make final settlements not exceeding $10,000 with their subcontractors and partial payments not exceeding $10,000 to their subcontractors, where the subcontracts were terminated as a result of the termination of a prime contract. This type of authorization has now been extended to apply also to fixed-price subcontracts terminated as a result of the modification of the prime contract or under any other circumstances which will require the Government to bear the cost of settling the termination claim of the subcontractor. The method of computing the size of the claim which may be settled has been amended to broaden the authorization (642.3, 987.1).

War Department policies and procedures are set forth, governing the disposition of Government-owned plant equipment installed in contractors' plants under leases or other contracts with the War Department (860-869). Within 60 days, or longer period as agreed, after a request has been received from the contractor in satisfactory form, the War Department will remove such equipment from a contractor's plant. Other provisions cover dismantling, packing, shipping, storage, and other disposition. The War Department's policy is to waive wherever possible any restrictive clauses in contracts which would impede prompt reconversion, provided that the contractor in turn promptly waives or exercises any option which he may have to purchase the equipment.

Cost-Plus-a-Fixed-Fee Contracts

Major changes in the procedures for settling terminated cost-plus-a-fixed-fee contracts have been in effect in the War and Navy Departments for several months.

These new procedures provide improved methods of coordinating the respective activities of the contracting service or bureau and the General Accounting Office prior to settlement. After termination and as a part of settlement procedure, the General Account-

(*Continued on page* 119)

Work Disabled Veterans Can Do In the Sheet Metal Industry

By Ernest E. Zideck
Sheet Metal Consulting Engineer

SOME publicity has appeared in newspapers stating that insurance companies and groups are discriminating against handicapped veterans. This is unfortunate and not true; insurance companies are now taking steps to make the true facts known through booklets which are being given wide distribution. One such booklet from the American Mutual Alliance, an association of mutual casualties companies, explains that "workmen's compensation rates *do not increase* on account of the employment of the handicapped; and that there is no indication that total losses (compensable accidents) are increased when the physically handicapped are *fitted into proper jobs.*" Another booklet, distributed by the American Veterans Association, Inc., contains information about the employment of disabled and handicapped persons at the Ford Motor Company's plants. The Ford River Rouge plant is cited, and it is interesting to note the following:

"96 persons with one arm amputated, are employed in tool cribs, as stock clerks, record clerks, inspectors and operators of simple machine tools and re-fitters of worn engines."

"3 persons with both arms amputated; one works in mail delivery, one is a flag man at a railroad crossing, and one is a follow-up man on work in process."

"19 persons with one hand amputated do work similar to the work done by men with one arm amputated, cited above."

"2 men with both hands amputated are employed as stock room attendant and inspector of Pratt & Whitney engines, respectively."

"175 men with one leg amputated, do bench work, inspection, wiring, grinding-polishing, etc., as also, with the aid of artificial limbs, they stand up while operating various machines."

"10 men with both legs amputated do work sitting down, such as electrical wiring, bench assembly and inspection. With the aid of artificial limbs—and if so willing—these men can stand up and operate small presses, drill presses, and such like machines."

"6 men, with one foot amputated, and with artificial feet, do work on production machines, much the same as men without any handicap."

"40 men, blind in both eyes, have been trained to do inserting of bolts and nuts, assembling of valves, inspection and gaging, and such other work."

"41 *nervous cases* were found to be not far from being *physically normal.*

Altogether, up to the beginning of the year, the River Rouge plant has re-employed 2,150 former Ford employees, and over 1,300 returned service men not

TABLE 1. EMPLOYMENT OF DISABLED VETERANS

Class	Kind of Work	Disability	Work to Do	Pre-Requisite
A	Planning—Drafting	One arm, one or both legs amputated	Head-Work, drafting	Experience, training
B	Processing	One arm, one or both legs amputated	Head-Work, penciling	Experience, schooling
C	Cost Estimating of above	One arm, one or both legs amputated	Head-Work, penciling	Knowledge
D	Layout, Templet Making	One arm, one or both legs amputated	Head-Work, marking	Knowledge (assistance)
E	Inspection	One arm, one or both legs amputated	Head-Work, marking	Knowledge
F	Shearing—Cutting	Artificial limbs (see text)	Handling of sheets	Leg and hand use
G	Provisioning in Flat	Artificial limbs	Operation of press, etc.	Leg and hand use
H	Forming	One artificial leg, arm, hand	Handling of sheets	Willingness to learn
I	Provisioning Formed Parts	One artificial leg, arm	Handling of drills, jigs	Leg and hands use
J	Fitting	One artificial leg	Handling of parts, tools	Leg and hands use
K	Inspection	Amputated leg or arm or both	Blue print reading, marking	Knowledge
L	Binding	Amputated leg	Handling parts and tools	Experience, training
M	Finishing	One artificial leg or arm	Handling of parts	Experience, training
N	Inspection	Two artficial legs, one arm	Blue print reading, marking	Knowledge, training
O	Final Finishing of Parts	One artificial leg, arm, both	Assisting	Willingness to learn
P	Sub-Assemblies	One artificial leg or arm	Assisting	Willingness to learn
Q	Assembly Finish	One artificial leg or arm	Assisting	Willingness to learn
R	Inspection	One artificial leg, arm, both	Fault detecting	Blue print reading, use of legs
S	Final Assembly	One artificial leg, arm. both	Assisting	Willingness to learn

formerly employed by the company had been placed in the various Ford plants."

In the sheet metal fabricating industry, as shown in Table I, we can employ the disabled veteran in jobs A, B, C, D and E, only when he has had former experience at that job, or has had enough pertinent schooling in the subject to qualify him to do the work. This is practically all engineering work, and requires a very good knowledge of sheet metal, the machinery and tools to be used and the modes of construction. The jobs under F to M, inclusive, can be assisted, but they can not be done, by men without previous experience or a very profound training. But the other jobs remaining on Table I, and all the jobs in Table II, can be quickly taught the willing veteran, and he needs no special training to grasp what is required and do it as well, or better than, any other "green" man could do it.

Inspection E, K, R, must be done by men who already have had experience in the work the departments are doing. In fact, these inspectors must be "masters" in the work the departments are doing — otherwise the inspecting will do no good. But all other inspection, in departments doing no specialized engineering or highly skilled mechanical work, can be taught the veteran; and no matter how "disabled" he is, he will make a good inspector as long as he can observe, read a blue print and specifications or, is told enough of the requirements of the job, to look for "faults" in it, and in other respects follow the direction of his supervisor or foreman.

Jobs in Sheet Metal Industry

These are: (a), Planing-Drafting; (b) Processing for Production; (c), Cost Estimating (applying to each single part as planed-drafted-processed); (d), layout and templet making; (e), inspection of the above; (f), shearing-cutting by templet or pattern; (g), provisioning in flat; (h), forming; (i), provisioning in formed parts; (j), fitting; (k), inspection of each of the above operations; (1), binding by seaming, riveting, welding-brazing, soldering etc., (m), abrasive finishing, polishing; (n), inspection of the above; (o), final finishing of parts; (p), sub-assembly; (q), finish of sub-assemblies; (r), inspection of sub-assemblies; (s), final assembly of the product and its inspection.

The above *jobs* require more or less familiarity with sheet metal work and jobs classified under "a, b, c, d, and e" require pertinent technical knowledge. But *"planning-drafting"* can be done by the one-armed man, as long as he knows what he is doing and can manage with his one hand to wield a pencil. The one-legged man and even a man minus both legs can perform well in the above job if he is a planer or sheet metal draftsman. *"Processing for Production"* also can be done by the handicapped man if he has the pre-requisite knowledge of sheet metal, of machinery and tools, and of the methods of working sheet metal. *"Layout"* for production and the making of templets or working patterns can be done, at least on small parts, in a sitting position. If the worker is aided by another man shearing the metal for him and doing the provisioning as called for, this worker can have but one leg or no leg at all, and still do the job— *if otherwise competent. "Cost Estimating and Inspection"* can obviously be done by a man without an arm or leg or both legs, as long as the man can handle a pencil and *knows his stuff*. Men with artificial limbs, but with their heads working right, can be employed to advantage in any of the above jobs.

The job classified under (f), *"shearing-cutting* by templet or pattern," can be *assisted* by a man minus a finger or so, and if the man with the artificial leg can stand on it and move and lift and handle the sheets in rapid succession, he can be so employed. That same applies to the operation of drill presses and notching and *provisioning* machinery, under (g). The

TABLE 2. EMPLOYMENT OF DISABLED VETERANS

Kind of Job	Disability	Work to Do	Pre-Requisite
Office Work	One artificial or both legs or one arm or either hand injury or finger loss	Case work—filing blue prints and blue printing; dispatching; messenger work	Experience, training, willingness to learn
Materials Stores	One artificial arm or finger loss, or hand injury, or one artificial leg	Receiving—Marking, perpetual inventory, issuing, record keeping, supervising help	Experience or training; or willingness to learn
Parts Stores	Same as above	Same as above	Willingness to learn
Tool Cribs	One or both legs amputated; one arm amputated; finger loss or hand injury (one)	Keeping inventory of tools on hand; records of tools issued; issuing; ordering new tools	Experience, training, willingness to learn
Materials and Parts Movement	One artificial arm; finger loss; hand injury	Operating conveyor; operating wheeling equipment; loading; unloading	Willingness to learn
Maintenance	One artificial leg and arm or either; finger loss; hand injury	Assisting with repair; oiling, cleaning; floor sweeping; keeping order	Willingness to learn
Packing, Crating, Shipping	One artificial leg or arm; finger loss	Record keeping; moving the product; nailing crates or boxes; marking-lettering; inspection	Training; experience; willingness to learn; training
Supervision, Time-Keeping, Record-Clerking, etc.	Leg or arm or both amputated; one artificial arm; finger loss; hand injury	Observation; correction by word; walking; writing; blue print reading	Experience or aptitude and training; willingness to learn
Guarding, Watching, Safety	Leg or arm or both amputated; finger loss, hand injury; artificial limbs	Gate-guarding; observing; warning; record keeping	Willingness to learn

assistant at the press brake or other such forming machinery as operated under (h), undoubtedly will do good work if his artificial limb permits standing and moving about and does not impede his handling of the sheets or parts processed. The next job, "provisioning in formed parts" under (i), if the provisioning is done on easily handled parts and if drill jigs and other such fixtures are used which the worker can easily handle even if he has lost fingers or his hands are otherwise slightly maimed, can be wholly done, or at least assisted, by handicapped men and by men with artificial limbs mentioned above. "Fitting" (j), can also be done by the handicapped man, all depending on the size and nature of the product or the part that is handled. "Inspection" (k), is the most logical job to be entrusted to disabled or handicapped mechanics, because this work requires more brains than brawn, and can be performed in most cases with little bodily movement.

The jobs classified under "l, m, n, o," are jobs requiring well instructed or skilled men, but if the man with the artificial limbs has had experience in doing any one of the tasks, especially "welding" or "soldering" or "abrasive finishing," he can, by proper arrangements of the means and working facilities, perform well in this class of work. But again, figuring that there will not be too many of the casualties employed in any one shop, the disabled or handicapped man who knows his trade or has been properly instructed to a degree qualifying him for the job, should be assigned to *inspection* of the operations, instead of doing the operation himself. The jobs "p, q, r, and s" should be similarly treated, assigning the veteran to inspecting; or on large constructions, to assist in the final finishing of parts, of sub-assembling, of sub-assembly finishing and in the final assemblies.

"Non-Productive" Jobs

In addition to the above clearly productive jobs, there are jobs in the office, in receiving and storing materials and tools or issuing materials and parts movement, oiling and maintaining of the machinery, floor cleaning, packing and crating for shipment, keeping of records, etc. Old hands at sheet metal fabrication, if otherwise fit and willing, can be appointed leaders, supervisors and foremen—and their physical disability need not interfere with their duties. In fact, the otherwise disabled or handicapped man might prove a very good supervisor. He will undoubtedly make a good inspector.

Other branches of sheet metal work—where the work is done more by hand than by machinery, and where each man is a mechanic with a minimum of men classed as "helpers," and where inspection work consists of a general routine—offer less opportunity for the disabled man to get, and hold, a job. In architectual, building and installation sheet metal work, as also in shops doing heating-ventilating-air conditioning, there is a more strenuous activity, requiring hard physical labor, so it is doubtful if men with artificial limbs can endure working under these conditions. In most installation work they would most likely feel their disability. So, unless the veteran is also a veteran in this kind of sheet metal work and can be "foreman" or "job-clerk" or "timekeeper" or such, he had better find a place in a manufacturing job.

The "Nervous" Veteran

Experience in New York city, under the Federal Board for Vocational Education training given the disabled veteran of World War I, has been the following: (a) the trainees were for the most part either "gased" or shell-shocked; (b) whereas a good percentage of the men learned quickly and worked industriously and was proud of the good work which he was doing, the other individuals were given to brooding, with quite a few having "halucinations" of being in the wrong place and entitled to a more promising, or dreamed of, future. These latter although subjected repeatedly to a "vocational guidance" procedure, which tried to place them as their ambitions pointed, failed utterly.

With the veteran of World War II we shall have much the same experience. The "bodily" disabled man (wounds of legs, arms, etc.), will be easier to handle than the "nervous" cases. In fact, as the example of the Ford River Rouge plant shows, the men who lost arms or legs or eyesight, in most cases are proving just as valuable workers as are the men who never went to war. Not much is being said in current reports about the "nervous" disabilities, except that the 41 cases "have been found not far from being physically normal." The report obviously tries to hide something. Judging from the experience we have had with the "shell-shocked" and otherwise "nervous" veterans of World War I, the truth is, that it is this kind of disability which will be the more difficult to cope with in industrial re-employment. There already are cases, reported by Washington, of men physically in excellent condition, declining "common" jobs on the ground "that they deserve something better."

Steel Supply

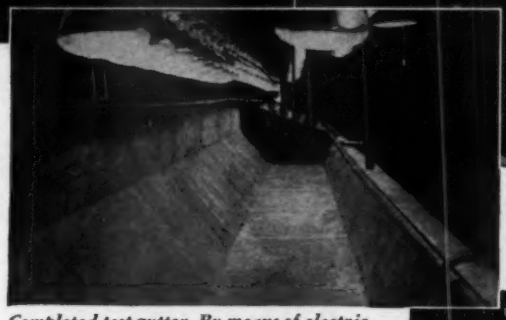
It is hoped that the supply of carbon and alloy steel for the third quarter will continue at about the same levels as in the two previous quarters — roughly 14,309,000 tons of carbon and 1,839,000 tons of alloy steel.

Third quarter allotments of steel for domestic non-military end uses are 330,000 tons greater than similar allocations made for the first quarter of 1945—the last full quarter of the two front war. This represents an increase of approximately 3.6 per cent above the first quarter level.

In addition to the steel allotted to essential production, there will be approximately 500,000 tons of "free" steel available to industry during the third quarter—that is, steel that can be purchased on open market without priorities. Moreover, it is also expected that the cutbacks in military procurements will make available to industry excess and surplus steel in substantial quantity, which will supplement the half million tons of third-quarter "free" steel. This "free" steel may be used for the production of goods that WPB no longer restricts by limitation orders.

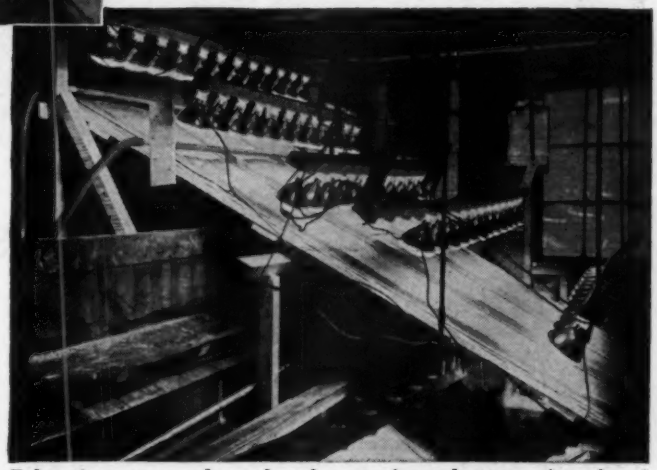
Better sheet copper construction
. . . thanks to REVERE research

Here cold water can be seen pouring into a heated copper gutter undergoing test. The behavior of the gutter during expansion and contraction was recorded by motion picture photographs.



Completed test gutter. By means of electric heating lamps and torrents of cold water, it was possible to create a temperature range of 160° F.

Installation of test gutter in Revere laboratory, duplicating a gutter which has given 70 years of perfect service on a public building.



Exhaustive tests were also conducted on experimental copper roof panels and other installations in order to cover every phase of sheet copper construction.

Several years ago, Revere set out to discover why many old-time sheet copper installations have stood up better than some of the modern ones—despite refinements in copper as well as in the technique of installation.

The reason, discovered and confirmed by painstaking work in the Revere laboratory, is simply this—any sheet copper installation must have enough columnar strength to expand, when heated, without buckling. Alternate buckling and straightening, with expansion and contraction due to outdoor temperature extremes, is the real cause of failure.

From these findings, Revere has been able to reduce the principles of sheet copper construction to a matter of engineering design, with the assurance of satisfactory performance.

Details will be described and illustrated in a new booklet now being prepared. Upon request, we will place your name on our list to receive a complimentary copy when issued. Write the Revere Executive Offices. Revere materials are handled by Revere Distributors in all parts of the country. For help with difficult problems, call on the Revere Technical Advisory Service, Architectural.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N.Y.

Fox Valley School Sessions and Evening Dinner

Fox Valley Studies Code and Manual

ON SATURDAY, April 28, the Fox Valley Furnace and Sheet Metal Contractors Association met in Aurora to conduct a one day school on the "New Code and Manual for the Design and Installation of Warm Air, Winter Air Conditioning Systems." G. A. Voorhees, chief engineer of the Hall-Neal Furnace Company, and member of the Code Committee of the National Warm Air Heating and Air Conditioning Association, acted as instructor. The school opened at 9 a. m. and continued until 6 p. m., when dinner was held.

One innovation placed this Fox Valley school apart from all other schools conducted previously. Contractors who attended were asked to bring one or more of their mechanics. As a result, there were 60 men attending the school, approximately 30 contractors and 25 mechanics. These men came from Aurora, Oswego, Yorkville, Batavia, Geneva, St. Charles, Elgin, Dundee, Hampshire, Rochelle, Naperville, and a few contractors were especially invited from Chicago.

As explained by President Jack Stowell, the reason for inviting mechanics is that in all the years schools have been conducted or classes or meetings held to discuss research data, such instruction has always been aimed primarily at the engineers and secondarily at the contractors. The mechanic has been left to shift pretty much for himself if he wished to know the reasons behind engineering design and installation practices. At the same time, it is apparent that the mechanic should know enough about design and installation to adequately represent our industry before the customer. Mechanics who do not know the answers to questions can create a very poor impression on the customr, whereas the intelligent mechanic who can answer questions can be a good will emissary frequently surpassing the engineer or the salesman, or

even the contractor. In order to be such a good will emissary, the mechanic should be trained to know the "why" as well as the "what" of warm air heating practice. Such properly trained mechanics can do much to impress the public with the fact that every faction in our industry is striving to give the public the best possible type of heating system.

At the beginning of the instruction period, approximately one hour was given over to a general explanation of Sections One, Two, and Seven of the proposed industry book, "Practical Warm Air Heating." Mr. Voorhees had a house plan and elevation details for a two-story structure, and from this plan the heat loss was figured, the equipment selected, and a distribution system sized from tables, charts and sections of the New Code and Manual. Frequently throughout the instruction period time was given over to general questions and answers.

At the conclusion of the instruction period, dinner was given for members and guests and several visitors were invited to express opinions. Jack Givens, business agent for Local 220, AFL, said he was very much impressed by the school and was delighted to see mechanics invited. Mr. Givens hopes to install an apprentice training program in the Fox Valley as soon as possible.

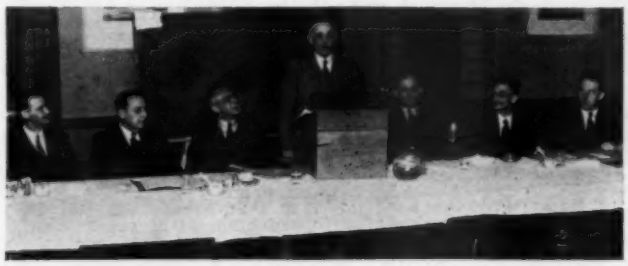
J. W. Wilder, editor of AMERICAN ARTISAN, presented a very brief summary of some postwar problems, such as revolutionary equipment, new methods of heating, and summarized some of the competitive advertising and publicity programs which are either under way or in process.

Engineering Schools on The New Code and Manual

Tri-State Presents Code

On the evening of May 2, 1945, The Tri-State Heating Supply Co. of 234-36 Murry Street, Fort Wayne, Indiana, sponsored a dinner to the warm air heating industry of Fort Wayne at the Chamber of Commerce, Fort Wayne. The dinner was a very enjoyable one.

The reason for the dinner was to bring before the men of the warm air heating industry, the new code and manual for the design and installation of warm air winter air conditioning systems, Section 7, of practical warm air heating as compiled by Prof. S. Konze and Guy A. Voorhees. A lengthy discussion of this code was presided over by the president of Fort Wayne Heating, Sheet Metal and Air Conditioning Association, Ivan Knepper.



Left to right—Messrs. Stump, Baxter, Voorhees, Redrup, Miller, Stiffler and Knepper.

W. Redrup, chairman of the board of the Majestic Company and chairman of the installation codes committee of the National Warm Air Heating and Air Conditioning Association, and Guy A. Voorhees, one of the compilers of the code, gave a very clear and definite presentation of the method of estimating heat losses by this new method. It was the consensus of opinion of the men present, that it was a big step forward in the designing of heating plants for the homes of the future.

The Heating, Sheet Metal and Air Conditioning Association of Fort Wayne, Indiana, do hereby express their appreciation and thanks to the Tri-State Heating Supply Co. and the owners, Charles E. Stiffler and Leo A. Stump, sponsors of the dinner and meeting and to Messrs. Redrup and Voorhees for the presentation of the new method, as they so aptly did.—J. W. Loney, Chairman, Publicity Committee.

◆

Canadian Chapter—NWAH&ACA

A course of lectures in Gravity and Forced Warm Air Heating, sponsorsed by the Department of Mechanical Engineering in co-operation with The National Warm Air Heating and Air Conditioning Association, Canadian Chapter, was held in the Mechanical Building Study Room, Third Floor, University of Toronto, Department of University Extension, the week of May 7 through 11.

The subject on May 7th was "Building Heat Losses" with A. Mackenzie as chairman, and the lectures and lecturers as follows:

"Derivation and Meaning of U Factor for Different Materials"—Prof. E. A. Allcut, Head, Dept. of M. E., Univ. of Toronto
"Derivation of Design Factors with Explanation of Design Temperature"—Prof. F. G. Ewens, Department of Mechanical Engineering, Univ. of Toronto
"Explanation and Calculation of Infiltration on a Crackage Basis"—Prof. G. R. Lord, Dept. of Mech. Eng., Univ. of Toronto
"Object of School and the Use of Standard Methods"—D. C. Ferguson, Gen. Mgr., Clare Brothers and Co., Ltd., Preston, Ont.
"Explanation of Information Blank"—R. C. Champlin, A. C. Eng., Timken Silent Automatic, Detroit
"Explanation of Work Sheet for Heat Loss Calculations and Selection of Equipment"—R. C. Champlin
"Preliminary Data to Heat Loss Calculations Using the Gravity Plan Problem Howe"—R. C. Champlin

On Tuesday, May 8, the subject was "Gravity Manual" with A. W. Given as chairman, with the following program:

"Gravity Plan Transmission Losses"—R. C. Champlin
"Gravity Plan Infiltration Losses."—E. B. Root, Eng., Superior Safety Furnace Pipe Co., Detroit
"The Flow of Fluids and the Nature and Extent of the Resistance Offered to Fluid Flow"—Prof. F. G. Ewens
"The Gravity Manual"—F. R. Bishop, Mgr. Blower Sales, The Brundage Co., Detroit
"Design of a Gravity System"—F. R. Bishop
Inspection of Heat Engine and Hydraulic Laboratories—University Staff

On Wednesday, the school covered "New Methods and Selection of Equipment" with D. S. Fisher of The Enterprise Foundry Co., Ltd., Sackville, N. B., as Chairman, with the following and lecturers:

"New Basic Methods and Formulae"—Prof. F. G. Ewens
"Forced Air Plan Heat Losses"—R. C. Champlin
"Selection of Furnace and Blower"—F. R. Bishop and E. B. Root
"Electric Motors"—C. A. Mills, Dist. Mgr., The Robbins and Myers Co. of Canada, Ltd., Toronto
"Temperature Control and Factors Affecting Same"—M. F. Thomas, Consulting Engineer, Toronto

On Thursday, the course covered the "Forced Air Manual" with G. A. Colborne, Findlays, Limited, Carleton Place, Ontario, chairman. The lectures:

"Location of Warm Air Registers and Intakes"—R. C. Champlin
"Line Diagram of Duct Layout"—R. C. Champlin
"Warm and Return Air Combinations"—E. B. Root
"Procedures for Determining Trunk Sizes"—E. B. Root

On Friday, May 11, the course covered general topics under the chairmanship of F. R. Rand, Enamel and Heating Products, Limited, Sackville, N. B. (Chairman Canadian Chapter).

"Humidity, Temperature and Comfort"—Prof. E. A. Allcut
"Principles of Combustion, Air Supply and Its Influence on Efficiency"—Prof. R. C. Wiren, Dept. of Mech. Eng., Univ. of Toronto
"Chimneys and Their Troubles"—D. O. Price, Heating Eng., General Steel Wares, Ltd., Toronto
"Future Plans and Schools"—F. R. Rand

Each day there was luncheon at Hart House, and a ban-

(*Continued on page* 120)

ASSOCIATION ACTIVITIES

Kansas City

Sheet Metal & Heating Contractors Association, Kansas City 3, Missouri, held their fifth annual dinner on April 5th in the Pine Room of Fred Harvey's Restaurant for members and their wives. The association now has 75 per cent or more of the Kansas City shops as members.

W. L. Tate, Secretary.

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Peoria

The Peoria Sheet Metal Contractors' Association met on May 28th and listened to an illustrated talk on Moduflow by Bill Beale and Jim Eldridge of the Minneapolis-Honeywell Company. About 28 contractors and guests attended the meeting.

All of last year's officers were re-elected in January. They are:

President—Ross M. Wallis.
Vice-President—Ellis Harms.
Secretary—Charles A. Linton.
Treasurer—Fred Hauer.

Directors are Henry Kilius, Fred Kowalske and Frank Eynatten.

R. M. Wallis, President.

◆

Los Angeles

The regular meeting of the Institute of Gas Heating Industries, Los Angeles, California, was held May 10th, and final arrangements were completed for the insertion of the several ads to be placed in more than forty local newspapers to remind consumers to have their appliances serviced during the summer months in order to avoid a rush of service calls in the fall. It is assumed that there will be a shortage of service men for sometime.

First ads will be placed between June 10th and June 20th. Second ad will appear between August 20th and September 1st.

A proposed County Ordinance covering solid and liquid fuels was submitted to The Institute for its consideration. The Institute acted favorably on the subject and also asked the County to adopt the new L. A. Municipal Code which went in effect May 28th.

The fifty-two candidates who finish the installers school on June 5th will be guests of The Institute at their next regular meeting to be held June 14th. They will be presented with a certificate showing that they completed the course.

In order that all the new Municipal Heating Code should be fully understood, a round table discussion was arranged at The Southern California Gas Company auditorium at 810 South Flower Street on May 16th. All Heating Contractors and their personnel were invited.

Mr. Wicks, Chief of The Heating & Ventilating Division of The City of Los Angeles and The Ordinance Committee of The Institute were present and did a good job in helping all to clearly understand the Code in detail.

C. A. Gabriel, Secretary.

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Florida Annual Conferences

The yearly conference of The Roofing & Sheet Metal Contractors Association of Florida was held at the Angelbilt Hotel, Orlando, on May 18th and 19th.

After much discussion membership fees were reduced to $10.00 with the hopes that membership would be enlarged. Affiliation with the National was tabled for another year.

The Florida Roofer will be continued, but after the May 31 issue, the manner of publication will be changed to Monthly Bulletin of Roofing & Sheet Metal Contractors of Florida, with new seal or emblem of the association.

W. L. Bartlett of Barrett Company has consented to furnish designs for a seal to use as stickers for all members as well as a design for mat to use on stationery.

A copy of the new By-Laws adopted at the conference will be mailed to all members as soon as they can be printed.

A Legislative Committee, composed of Frank Tack, O. J. Nettles, and Fred Faulkner was appointed, and was supposed to bring immediately a report regarding certain legislation now being promoted in Tallahassee. Their findings were as follows:

Senate Bill No. 490 and No. 709 which were for reduction of unemployment Compensation, requesting all members to use their influence to VOTE FOR. To vote against Senate Bill No. 515 which creates a Secretary of Labor to represent employees. To vote against Senate Bill No. 516 which creates a Labor Relations Board which is in direct violation and nullifies present "Right to Work" amendment voted by people at last state election.

Note: We have been informed that Senate Bill No. 490 and other bills pertaining to reduction of Unemployment Compensation Insurance rates have been combined into Senate Bill No. 603. House now waiting for this bill to pass the Senate so they may substitute it for House Bill No. 709. We understand that Senate Bill No. 603 will be passed. Senate Bill No. 515-No. 516—killed in committee.

A committee composed by H. O. Bishop, Frank Ahrens, and E. O. Hathaway were named by the Manufacturers' Representatives as an Advisory Committee to assist in obtaining members throughout the state and work in assisting the officers to further the causes of our association.

At this conference the following officers and directors were elected:

OFFICERS: President, John A. Gross; 1st Vice-Pres., Fred Faulkner; 2nd Vice-Pres., Frank Tack; 3rd Vice-Pres., O. J. Nettles; Sec.-Treasurer, John T. Stewart.

DIRECTORS: Mack Fillingham, Ellard Kohn, S. L. Boyett, H. M. Force, Wm. Palmer.

It was decided to hold the next conference in West Palm Beach in 1946—dates to be decided later. The Ladies Committee was appointed to assist in the arrangement of this conference to be composed of the following: Mrs. F. A. Carpenter, Mrs. Henry Delburn, Mrs. Edwina Henderson, Mrs. J. T. Stewart, Mrs. Wm. Palmer, Mrs. R. E. Moorhead, Mrs. L. A. Burgess, Mrs. Ellard Kohn, Mrs. F. F. Ahrens, and Mrs. Otto Widell.

Objectives are:

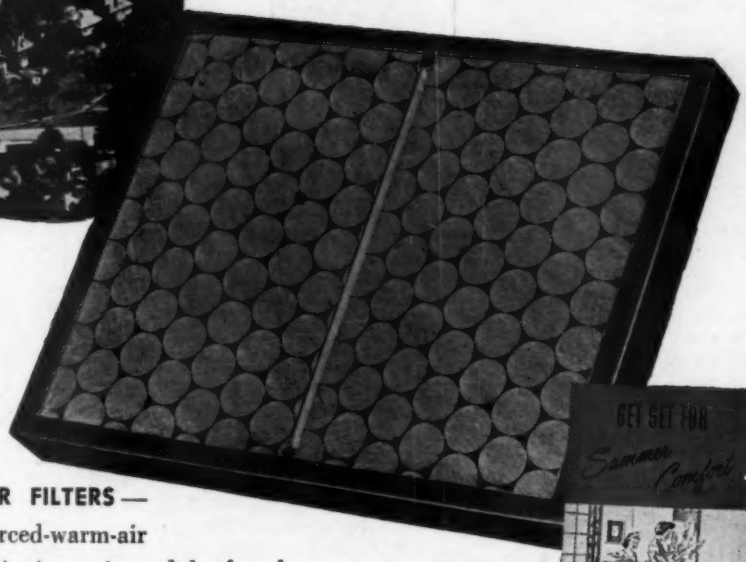
1. That the membership be increased
2. Secure an interpretation and if necessary a corrective Mechanic's Lien Law
3. Lower rates for Workmen's Compensation insurance to be equalized with rates of other crafts of similar nature.

The new Secretary-Treasurer extends "Greetings" to all the "old friends" met while secretary-treasurer a few years ago, also to newer members and associate members whom be expects to meet as soon as it is possible to make a trip through the territory in the near future.

(*Continued on page* 104)

For Profitable Service Business NOW

HERE'S A COMBINATION HARD TO BEAT

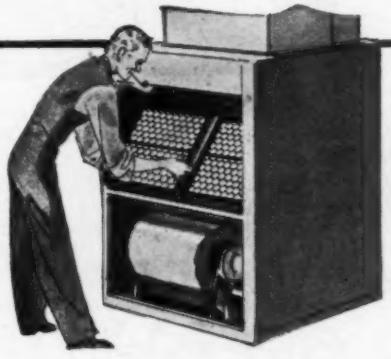


A BIG MARKET for sales and service — more than 1,700,000 homes equipped with modern *forced-warm-air* furnaces . . .

EFFICIENT DUST-STOP* AIR FILTERS — original equipment in most forced-warm-air furnaces and winter air conditioning units and, by far, the leading *replacement filters* (owners usually change filters once or twice a year) . . .

TIMELY, EFFECTIVE PROMOTION MATERIAL, available at no charge. Used separately or together, these colorful direct-mail pieces can help you get into *forced-warm-air* heated homes—to sell DUST-STOPS at a nice profit, and to line up profitable "service" business right now, during the quiet summer months. Ask your DUST-STOP Supplier about this free promotion material. Better do it today!

Owens-Corning Fiberglas Corporation, 1930 Nicholas Bldg., Toledo 1, Ohio.
In Canada: Fiberglas Canada Ltd., Oshawa, Ontario.



DUSTOP AIR FILTERS
—a FIBERGLAS product

*T. M. Reg. U. S. Pat. Off.

Every owner of a forced-warm-air furnace needs two or more Dust-Stop Air Filters . . . at least once a year.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 110 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.
● Indicates product not listed in 1945 Directory.

32—Hand-Fired Control

Automatic Products Company, 2450 N. 32nd St., Milwaukee 10, has designed an all-hand-fired coal heat-

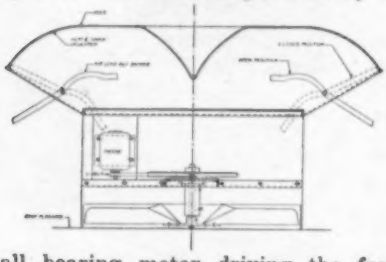
ing system control, known as the "A-P" automatic regulator set, to prevent overheating.

The "A-P" automatic regulator set is precision built throughout. Current war-time regulations restrict the production of the control at this time.

◆

33—Wolverine Roof Fan

Belanger Fan and Blower Co., 1230 Eighteenth St., Detroit 16, has added the Wolverine roof fan to its line. The Wolverine has a propeller of from 12 to 20 blades of large area bolted to a central flange and easily replaced. The unit is powered by a



ball bearing motor driving the fan wheel, which in turn is mounted on a shaft running on a double row of ball bearings. The square case and hood are constructed of prime steel sheets reinforced with angle iron and the hub assembly of the fan is supported with arc welded angle iron. The unit is insulated against loss of heated air in winter or conditioned air is summer. The damper design combines the damper and duct turn in a single unit. It is made in sizes from 30 to 60 inches, inclusive, with capacities from 5,640 to 45,275 cfm.

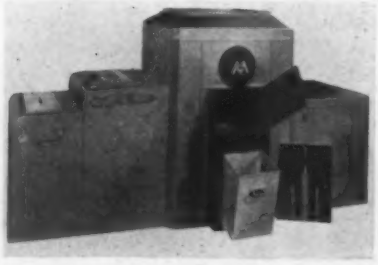
Installations can be made on roofs with angles up to 45 deg.

34—Steel Stoker Furnace

The Majestic Company, Huntington, Indiana, is offering a heavy-duty steel stoker furnace for gravity or forced air heating systems—120,000, 150,000 and 180,000 Btu capacity.

Special "Conduvectors" or radial fins in the crown of the primary unit provide added square feet of radiating surface, and direct the air over the hottest furnace surfaces for maximum heat transfer. Construction is of boiler-plate steel with electrically-welded, leak-proof joints.

The casing is constructed with in-



terchangeable panels...so that any standard type stoker may be installed on either side of the furnace.

A built-in clinker can is an added feature. Clinkers are raked from the fire bowl into the clinker compartment without having to be taken out of the furnace enclosure. Conveniently sloping furnace door adds to the accessibility of the fire-bowl area for clinker removal. The draft tends to draw fly-ash back into the fire pit when clinkers are being placed in the can. When filled, the big, 12-gallon removable container can be easily slid from below the furnace door.

This Majestic heavy-duty steel stoker furnace is available either with deluxe casing, featuring a red finish with chrome trim, or in the round galvanized iron casing.

◆

35—EutecTrode 28

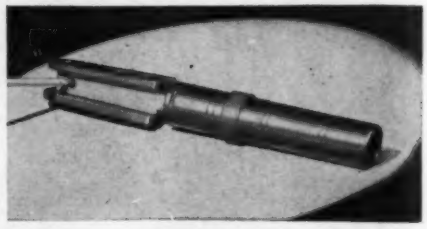
The Eutetic Welding Alloys Company, Department A-2, 40 Worth Street, New York 13, New York, has introduced EutecTrode 28 a coated special bronze alloy for the arc welding of bronze, brass, and copper.

EutecTrode 28 contains an unusual combination of metals and is shielded with a newly devised flux coating that makes it suitable for use either on AC or DC current. Available in ⅛ and 3/16 inch dia.

● 36—Electrode Holder

Allis-Chalmers Mfg. Co., Milwaukee 1, announces a new screw-type electrode holder—one-third lighter than corresponding size clamp-type holder.

Exposed metal surfaces of the new



electrode holder are constructed of spatter-resistant Mallory metal. Simplified design facilitates easy replacement of parts, and heavy insulation and adequate handle ventilation provide cool operation.

Available in light and heavy duty sizes to accommodate electrodes up to ⅜ inch diameter.

◆

37—No. 214 Unishear

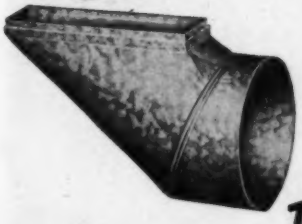
Stanley Electric Tools, Division of The Stanley Works, New Britain, Conn., has added the Stanley No. 214 Unishear—a portable electric shear —to their line.

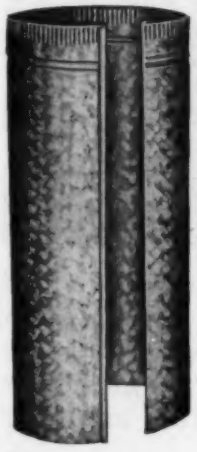
Stanley No. 214 is light in weight, easy to operate, cuts 14-gauge hot rolled steel and other sheet materials

in proportion. This No. 214 Unishear has a simple, improved blade motion that "feeds in" the work so that little effort is required by the operator to cut straight lines, curves, angles and notches accurately and without distortion. Blades can be removed easily for resharpening.

Universal type motor operates either on D. C. or A. C. Available in 115, 220, 230 or 250 volts.

There's NO "FITTING" with Moncrief Fittings— THEY FIT!





THEY'RE DIE STAMPED - MACHINE MADE

YOU CUT INSTALLATION HOURS

YOU CUT INSTALLATION COSTS

YOU INCREASE YOUR PROFITS

MONCRIEF WARM AIR
PIPE and FITTINGS

Have Proven Best by Installation Test!

WRITE FOR CATALOG GF-44

WARM AIR FURNACES
FURNACE PIPE AND FITTINGS

MONCRIEF
SINCE 1895

AIR CONDITIONING SYSTEMS FOR COAL GAS . . . OIL

THE HENRY FURNACE CO. MEDINA, OHIO

THEY'RE *counting on* BETHLEHEM SHEETS

Men who know their steel sheets—men who work at forming and drawing operations day after day—know that Bethlehem Cold-Rolled Sheets do a consistently good job because they're uniform, ductile and easy on dies.

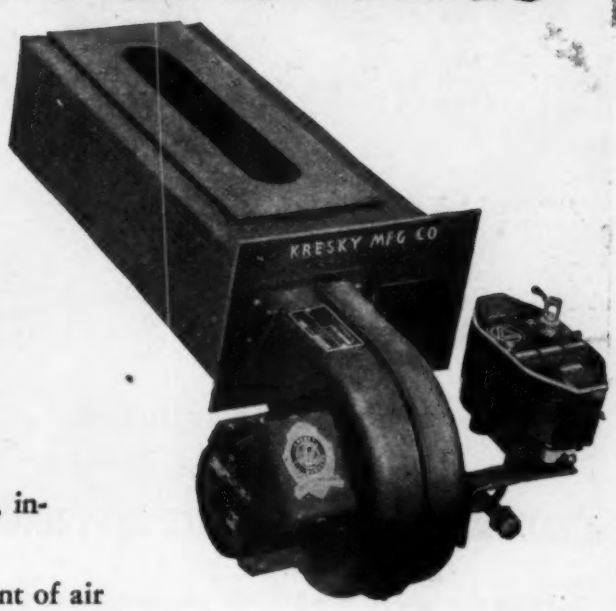
Under pressure of wartime needs, Bethlehem Sheets have come through—and brilliantly—drawing operations more drastic than were dreamed of a few years ago. When the fighting is finished, users of Bethlehem Sheets will be putting this wartime experience to good account.

Makers of refrigerators, automobiles, metal furniture, gasoline pumps, heating and ventilating apparatus, and other equipment in vast variety, together with sheet-metal contractors—they're counting on Bethlehem Sheets to do a postwar job for them.

They know their finished product will not only have high performance-appeal, but will also show real eye-appeal, thanks to the fine surface finish and all-around high quality of Bethlehem Sheets.

★ BETHLEHEM STEEL ★

KRESKY OIL BURNERS



They Suit because They're Sootless!

Kresky Oil Burners deliver a long, clean, extra hot flame that is smoke-free and therefore soot-free. They do it because:

1. They induct air into the fire mechanically, instead of depending on natural draft.

2. They introduce exactly the right amount of air in the right way to produce maximum combustion—thanks to the exclusive Kresky design.

ARMY (E) NAVY

An Active Line for Active Distributors

With the Kresky Burner as the basic sales feature, Kresky produces a full line of Floor Furnaces, Space Heaters, Basement Furnaces, Hot Water Heaters and Conversion Burners adaptable to a wide variety of oil burning appliances. If you're interested in a well varied line with nearly 40 years of leadership in its field, write for full particulars.

KRESKY OIL BURNERS UNSURPASSED PETALUMA CALIF U.S.A.

KRESKY MANUFACTURING CO.

Pioneers in Oil Burning Equipment Since 1910

PETALUMA CALIFORNIA

Equipped with Flashing that DRAINS ITSELF DRY...

Kensington High School, Buffalo, N. Y., protected by Anaconda Through-Wall Flashing. Supervising architect for the Board of Education: Daniel G. McNeil. Sheet Metal Contractor: Joseph A. Sanders & Sons, Inc., Buffalo.

Recent check of installation proves value of ANACONDA THROUGH-WALL FLASHING

Protection against wind-driven rain and moisture penetrating through the masonry was built into the walls of this beautiful high school in Buffalo, N. Y., in 1941. It was provided by 3500 pounds of Anaconda Through-Wall Flashing.

This flashing, made of 16-ounce copper, is designed to drain itself dry on a level bed. Positive protection is thereby provided and heaving by frost is reduced to a minimum.

A recent inspection of this installation disclosed no signs of seepage into the building. Both the Architectural Bureau of the Buffalo Board of Education and Joseph A. Sanders & Sons, Inc., the sheet metal contractors, expressed complete satisfaction.

Investigate the advantages of Anaconda Through-Wall Flashing for postwar construction. For detailed information send for Publication C-28 or refer to "Sweets's File."

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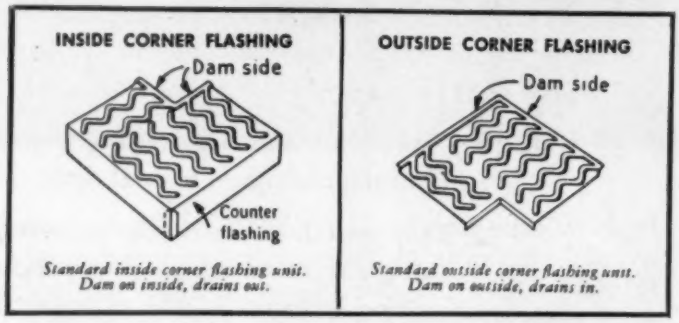
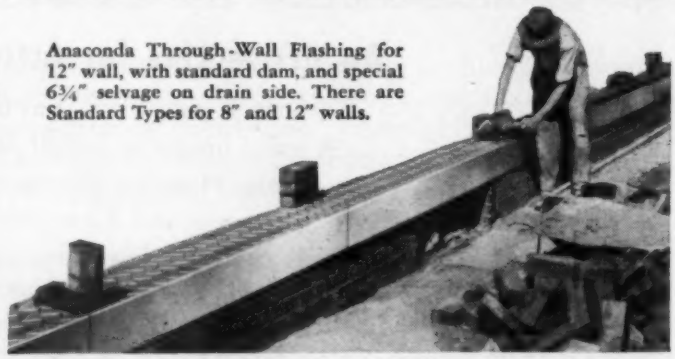

INSIDE CORNER FLASHING
Dam side
Counter flashing
Standard inside corner flashing unit. Dam on inside, drains out.
OUTSIDE CORNER FLASHING
Dam side
Standard outside corner flashing unit. Dam on outside, drains in.



Anaconda Through-Wall Flashing for 12" wall, with standard dam, and special 6¾" selvage on drain side. There are Standard Types for 8" and 12" walls.

Keep Faith With Your Fighters and Yourself! Buy War Bonds for Keeps.

ANACONDA

Anaconda Copper

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

Illustration from Bryant national advertisement

READY FOR NEW POSTWAR IDEAS?

Toss out your prewar ideas of what made a good heating line! Plan to be in step with modern desires in heating with the Bryant Heater postwar line . . . *the most complete line of gas heating in the nation!*

Soon to be announced in these pages, this line will include more than thirty gas heating units. It will provide the proper equipment for every heating job, whether complete winter air conditioning for the large residence, room heaters for the small cottage, or modern heating for office building or industrial plant. There will be "new idea" units designed to save space, to harmonize with decoration. There will be other allied specialties to help you make an extra sale in every household.

Watch for the coming announcement of the Bryant Heater postwar line. It's just what you've been hoping for if you are ready for new postwar ideas!

THE BRYANT HEATER CO., CLEVELAND, OHIO
One of the Dresser Industries

bryant
GAS
HEATING

LET THE PUP BE FURNACE MAN

When there's riveting to be done...

Ever hear of Explosive Rivets? They're another development of Du Pont. If you manufacture a riveted product . . . an auto body, radio chassis, heating and ventilating equipment or parts . . . these Rivets may save you time, money and manpower.

Millions of Explosive Rivets are being used by builders of Uncle Sam's hard-hitting aircraft. They help speed production . . . save man-hours . . . help do a better job of construction.

Explosive Rivets simplify blind riveting and riveting in places that are hard-to-get-at. Anyone can install them, and they're set in less than two seconds.

Explosive Rivets make riveting easy.

1. Insert Rivet in drilled hole.

2. Fire it. Result: a strong, tight and completely finished job of riveting that saves time, costs and labor.

Get your copy of the useful 12-page manual on Du Pont Explosive Rivets. It shows applications . . . how to determine sizes . . . explains how to use these modern metal-fasteners. Mail the coupon below today. It may lead to important savings. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington, Delaware.

How Explosive Rivets work!

The shank of a Du Pont Explosive Rivet contains a minute charge (above left). Application of an electrically heated Du Pont Riveting Iron to the rivet head causes the charge to set the Rivet (above right). Rivet shank completely fills the hole and a barrel-shaped head is formed on the blind end of the Rivet, setting it securely in place. It's an easy job.

DU PONT EXPLOSIVE RIVETS

The only one-piece blind rivet

DU PONT
REG. U.S. PAT. OFF.

E. I. du Pont de Nemours & Co. (Inc.)
Explosives Department, Wilmington, Delaware

Please forward free copy of your helpful manual on Du Pont Explosive Rivets.

Name_____

Firm_____ Title_____

Street_____ City_____ Zone____ State_____

We are riveting_____

HOT NEWS FOR YOU!

Toridheet Pressed Steel Burner NOW AVAILABLE

Model "S" Gun Type — Weighs 89 lbs. — half the weight of average burner. Weight saving means freight saving! Lower in price — lower cost of replacements

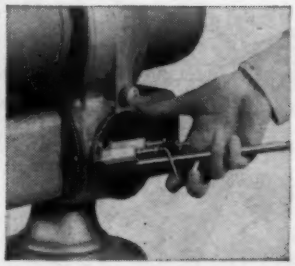
Years ahead in design, has a fine service record. Measures up to Toridheet standards of efficiency. Condensed story of its outstanding features given below will interest you. Yes indeed, it's available now.

MEMBER OBI OIL BURNER INSTITUTE

Beauty • Efficiency
Serviceability

The Model S oil burner is symmetrical and attractive in design. Because of its streamlined construction there are no exposed parts . . . no gadgets. Needs little space. Stands close to heating plant when installed. Glossy, lacquer finish.

Airometer air control. The air for combustion is metered so precisely the atomized oil is thinned to a minimum for low cost operation. An adjustable scroll (patents pending) within the burner is the ingenious device which governs air volume.



Complete electrode assembly and tube to nozzle are removable through the back of burner. Note the square electrode porcelains. The electrodes are held rigidly in place to maintain hottest spark for the atomized oil at the nozzle.

Light in weight. Strong, precision-made, deep-drawn, ductile steel stamping. Assures close alignment between shafts of motor and fuel unit for quiet, trouble-free performance. Years ahead in design, construction and durability.

TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORP. • CLEVELAND 2, OHIO

Oil Burners • Air Conditioning Units • Oil-Burner Boilers
Coal and Gas Furnaces • Oil Water Heaters

WE'RE ALMOST READY . . .

TO TALK BUSINESS WITH DEALERS WHOSE THINKING CARRIES BEYOND THE HONEYMOON PERIOD.

Yes, come conversion day, we're going to have two things to sell--and only two . . . *a product and a policy!*

Our product will be the new line of MOR-SUN Pressed Steel Furnaces . . . a furnace born in practical research and bred in the light of our thirty years of manufacturing *"know how"*.

Our policy is CONTROLLED DISTRIBUTION . . . the result of a mutually profitable interchange of ideas with qualified warm air heating equipment dealers--all over the country--the result of a careful study of things beyond the product itself . . . merchandising methods, services rendered, shipping details, retail assistance.

We are sincere in our desire to continue the close harmony between dealer and manufacturer--after the Honeymoon Period too!

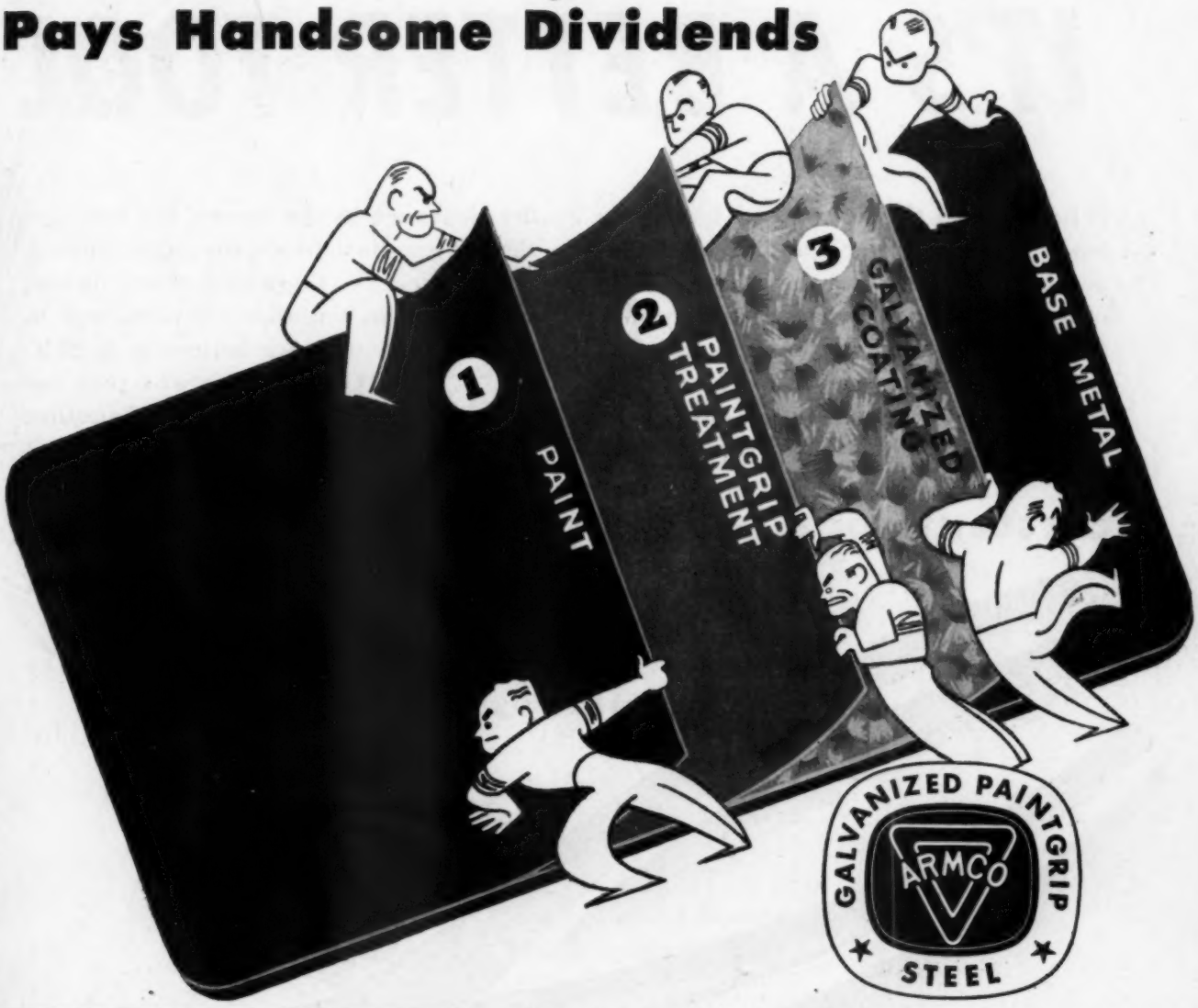
Keep your eye on the MOR-SUN emblem . . .

MOR-SUN
PRESSED STEEL FURNACES

"The Sun Never Sets with MOR-SUN!"

MORRISON STEEL PRODUCTS, Inc. Buffalo 7, N.Y.

HERE'S WHY *Triple Protection* Pays Handsome Dividends



The "Scratch Test" shows how paint sticks to ARMCO *Galvanized* PAINTGRIP *steel. The top half of the sample is Bonderized at the mill. When scratched with a penknife only a slight mark can be seen. Paint on ordinary galvanized steel (bottom half) peels off readily.*

This "peel-off" picture clearly shows why you can use Armco Galvanized PAINTGRIP sheets *to advantage and profit.*

No. 1 is the smooth, tight paint finish that lasts several times longer than paint on ordinary galvanized or uncoated sheets. No. 2 is the special mill-Bonderizing that takes paint without pre-treatment. No fuss, no bother, no added cost. No. 3 is the full-weight galvanized coating that protects the high-quality steel base from rusting.

You can shear, brake, bend, solder or weld ARMCO PAINTGRIP with regular shop practices. But most important, you can offer your customers more attractive, more durable and more economical sheet metal work—from roof-drainage jobs to exposed air-ducts. You will profit from their satisfaction and word-of-mouth advertising.

Write for the ARMCO PAINTGRIP booklet, which gives complete information on fabricating and finishing. And keep in touch with the Armco Distributor; so you can get PAINTGRIP quickly when it is released from war-duty. The American Rolling Mill Company, 1161 Curtis Street, Middletown, O.

*All things considered**

IT'S A BETTER TOOL

It takes more than one good feature to make any tool better, handier, more dependable in use. Take the famous Crestoloy End Cutting Nippers as an example. Many thousands of skilled workmen find them an indispensable item in their tool kits. Yes, all things considered . . .*the width of the blade, the clearance in the throat, the leverage ratio of handle to blade, the angle at which blades meet . . . these and other factors have all been scientifically perfected to give the user what we believe is A BETTER TOOL. That's why they are entitled to be called . . ."another Crescent Best Seller."

CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK

SKILL

Through its skill in design and manufacturing, Luxaire was able in its first full year of operation to become one of the large volume producers of warm air heating and air conditioning equipment.

When war came this skill, together with increased manufacturing space and greater facilities, enabled Luxaire to double its output of material for war.

The improved skill, which war-time demands have given to the Luxaire organization, will make possible further improved methods of manufacturing Luxaire products. The peace-time benefits of this greater skill will be enjoyed by those who sell and install Luxaire equipment.

Luxaire

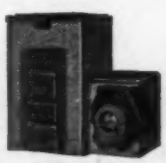
THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

THE PRE-WAR LINE OF LUXAIRE WARM AIR HEATING AND AIR CONDITIONING UNITS FOR COAL, GAS, OIL

Series 600 Coal Fired Steel Gravity Furnace

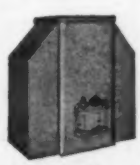
Series C Coal Fired Cast Gravity Furnace

Series 700 Coal Fired Steel Gravity Furnace



Series AC-700 Coal Fired Steel Air Conditioning Unit

Series A Gas Fired Steel Air Conditioning Unit



Series G Gas Fired Steel Gravity Unit

Series H Gas Fired Steel Utility Air Conditioning Unit

Series 800 Oil Fired Steel Air Conditioning Unit

When it comes to Selling Servants!

If Mrs. Uptown phoned you for, "— one butler, two maids, a cook and a gardener," you'd probably cuss people who call a heating dealer when they wanted an employment agency! But wait a minute! After all, aren't you selling one of the most remarkable servants ever to make man's life happier, more luxurious, more comfortable — Automatic Heating !

You can expect many great advancements in Automatic Heating from Rudy after the war. Surveys show that an overwhelming number of home owners are going to change over to automatic "hands off" heating equipment — Rudy dealers will be ready to get this business. If you haven't investigated the Rudy franchise, write today.

RUDY FURNACE COMPANY · DOWAGIAC, MICH.

EVEN FINER RUDY PRODUCTS FOR THE WORLD OF TOMORROW

AEROFIN

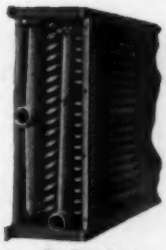
Heat Exchange Surface

For Cooling

Direct Expansion Unit with Centrifugal Header

With the approach of warm weather comes the problem of cooling, but there need be no problem with the use of AEROFIN.

AEROFIN can fill every need, regardless of type or size.



Aerofin Continuous Tube Water Coil

Years of research by the most exacting of specialists in the field, have made AEROFIN what it is today. It can withstand the most rigid test and is the dependable choice of architects, engineers and contractors engaged in air conditioning, heating and ventilating.

DIRECT EXPANSION coils for gaseous refrigerants, CONTINUOUS TUBE water coils for liquid refrigerants and CLEANABLE TUBE units with removable header for periodic cleaning of tubes for excess sediment are some of the types of units offered by AEROFIN.

Cleanable Tube Unit with Removable Header

•

The home office or any of the district offices are ready and waiting to help you on your particular problem.

AEROFIN CORPORATION

410 S. GEDDES ST., SYRACUSE 1, N. Y.

Chicago Detroit New York Philadelphia Dallas Cleveland Toronto

Northwestern

IS READY TO GO!

AS war restrictions are lessened, Northwestern Stove Repair Company is preparing to meet the greatly increased demand that is bound to come for Northwestern quality repair parts. Northwestern has set some new records for service even under the difficult conditions brought about by war. Northwestern has never compromised with quality. Northwestern is still the first place to call on for the best service and the finest quality in parts for all furnace repairs. Yes, Northwestern is ready to go when the big rush starts . . . and ready to serve you now to the limit of supplies and man power. Call, write or wire Northwestern for the best in repair parts.

Northwestern STOVE REPAIR COMPANY

662 West Roosevelt Road — Chicago 7, Illinois

EVERYBODY SAID- "it can't be done!"

-BUT WE HAVE BEEN DOING IT FOR OVER 10 YEARS

Indorsed by thousands

There is real satisfaction from coal heat, and doubly so with a Pocahontas Automatic Stoker.

"Reduces Labor 97%"

"A valued servant, one that doubled my comfort while reducing my labor 97%; saved 146 trips per month to the basement."

"Saved $234.01"

"With your marvelous Pocahontas Stoker I am now able to give you figures on my expenditures for the year."

1939-1940 Handfiring . . $435.78
1940-1941 "O.P." Stoker . $200.77

"Had Clinker Digger Stoker"

"Now I know what folly it was to dig clinkers, shovel coal. I am enthusiastic over my "O.P."

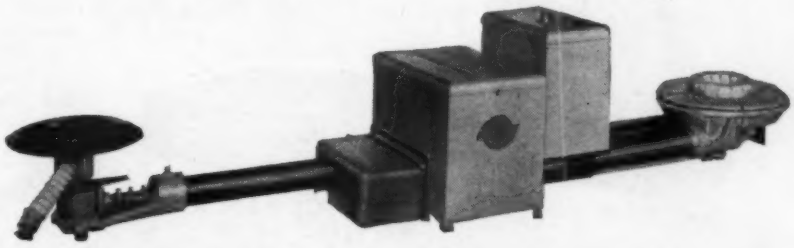
"I was Skeptical"

"However, after using the Pocahontas last winter, I find it everything you told me."

(*These names and many more on request*).

The Pocahontas Fuel Company Incorporated decided to manufacture a stoker, because they felt there was a definite need for one so automatic it would feed coal from bin to stoker and would automatically remove its own ash. "Experts" said, "It can't be done." However, by employing the finest skill, tireless research, and using the full resources of the Company, a completely automatic stoker was developed. Now, with over 10 years of manufacturing experience and with thousands of installations already in the field, heating authorities everywhere agree that Pocahontas has revolutionized heating with bituminous coal and a great market for automatic coal heating has been opened for the future. You are invited to send for full information. There is still some lucrative territory available.

POCAHONTAS FUEL COMPANY INCORPORATED
338 East 131st Street • Cleveland 8, Ohio



POCAHONTAS THE FIRST SUCCESSFUL BITUMINOUS BIN-FEED, ASH REMOVAL STOKER

WHY WAIT FOR POST-WAR?

GET SET NOW FOR A

PERMANENT, PROFITABLE

STOKER BUSINESS with

FREEMAN

LONG-LIFE STOKERS

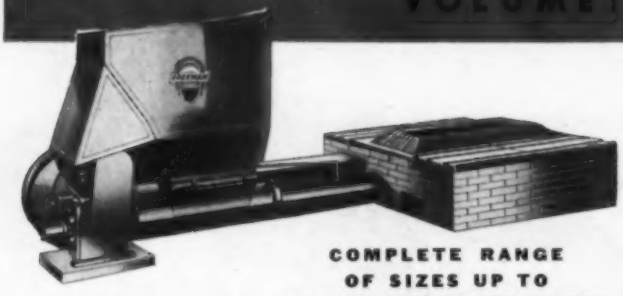
FIRST CHOICE OF AMERICA'S FOREMOST HEATING ENGINEERS

...PIONEER OF THE STOKER

INDUSTRY AND ONE OF THE

LEADERS IN NATIONAL SALES

VOLUME!



COMPLETE RANGE OF SIZES UP TO 1200 POUNDS PER HOUR

FREEMAN STOKER DIVISION
ILLINOIS IRON & BOLT CO.
918 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

Association Activities . . .

(*Continued from page* 86)

Indiana

The officers and directors of the Sheet Metal & Warm Air Heating Contractors Association of Indiana, Inc., held a meeting at the Fowler Hotel, at Lafayette, Indiana, May 21, 1945.

Meeting was called to order by James R. Walker, president with the following officers and directors present: J. R. Walker, H. M. Meggs, Thomas Ewing, Homer Selch, E. L. Carr, Chas. Gatz, L. Lehnen, C. Butz.

The secretary reported the re-organization of the Association, with name changed from Sheet Metal Contractors Association to Sheet Metal & Warm Air Heating Contractors Association of Indiana, Inc.

The promotion of a warm air heating school for our organization was discussed, and after a lengthy debate, it was left to the president to decide on future action.

A suggestion was made to get out new membership cards, all directors to be a committee of one to bring in membership slogans.

Questions were asked about the wages paid to furnace and sheet metal workers over the State and the wages ranged from $1.00 to $1.50 per hr. for the non-union rate—union rates differ.

The Policy Committee reported progress: Mr. Carr, Chairman. Messrs. Mutz, Meggs and Schmidt on Committee.

There was lengthy discussion on the Unemployment Compensation Divisions' Separation Report—Forms 501 to be made out by employer for every employee leaving his employ and to give full details for reason of separation; this same report to be given to new employer when hiring applicant, as a means to prevent available unemployment security funds being dissipated; also, the question of Schools for apprentices over the State and whether a plan could be worked out beneficial to students. This subject to be taken up by the president and decided upon.

A suggestion was made to hold a Board of Directors meeting at New Castle, August 4, 1945, and take up details and plans for holding a convention in February, 1946.

Motion made by Carr seconded by Ewing, that Mr. Butz be appointed to serve as 2nd Vice-President. Motion carried.

Motion made by Lehnen, seconded by Gatz, that we appoint Frank Anderson, Terre Haute; R. A. Huncilman, New Albany; William Bell, Hammond, new directors. Motion carried.

Motion made by Carr and seconded by Butz that we appoint O. N. Frank, South Bend and B. L. Schlemmer, Warsaw, as Sergeants-at-Arms. Motion carried.

By-Laws of the association were read and approved by the Board of Directors.

Officers and directors spent the afternoon with Prof. Miller at Purdue University, who took them through the housing project and explained in details the various heating units.

After a warm and busy day, all enjoyed refreshments at the Tavern Brewery.

Homer Selch, Secy.

◆

Refrigeration Condensing Unit Association

The Standard Refrigeration Compressor Association has been disbanded and members who are also members of Refrigeration Equipment Manufacturers Association (Rema) have formed a Refrigeration Condensing Unit Manufacturers Association as a division of Rema. This new association was formed by the following manufacturers: Brunner Mfg. Co.; Curtis Refrigerating Machine Division of Curtis Mfg. Co.; Lynch Mfg. Corp.; Mills Industries, Inc.; Servel, Inc.; Tecumseh Products Co.; Williams Oil-O-Matic Heating Corp.

B. J. Scholl of Brunner was elected chairman of the

HERE'S WHAT YOU WANT TO KNOW

in answer to some important questions about SUNBEAM

QUESTION: How soon can we get brand-new SUNBEAM furnaces?

ANSWER: When our job for Uncle Sam is done. Then we'll resume producing SUNBEAM Warm Air Furnaces and Winter Air Conditioning units on a scale even larger than before.

* * *

QUESTION: Will they be as good as the SUNBEAM products manufactured before the war?

ANSWER: Absolutely! SUNBEAM has been the leader. SUNBEAM will continue to be the leader.

* * *

QUESTION: But what are you doing to keep leadership for SUNBEAM?

ANSWER: You will find the answer in our Institute of Thermal Research — the largest laboratory in the world for testing heating equipment. Here heating experts are at work today to assure you that the SUNBEAM you install tomorrow embodies the most advanced development of design and construction.

* * *

QUESTION: Will there be any change in distribution of SUNBEAM products after the war?

ANSWER: No. Our plans do not call for any change in our pre-war method of distribution.

* * *

QUESTION: Can I get SUNBEAM repair parts now?

ANSWER: You bet you can! Genuine SUNBEAM repair parts are available at your Wholesale Distributor right now.

AMERICAN RADIATOR & Standard Sanitary

New York CORPORATION *Pittsburgh*

USE
Peerless Electric
BLOWER ASSEMBLIES
in your
FURNACES and CABINETS

TWO TYPES
BOTH Peerless Electric

Belt drive assemblies with either top or rear mounted motor—with resilient bases to prevent vibration. Direct drive assemblies use specially-designed Peerless Electric capacitor motors—exceptionally efficient and quiet. Blower wheels, directly connected to motor, are forward curved, dynamically and statically balanced.

ELIMINATE service worries by installing Peerless Electric blowers for winter air conditioning and forced air heating.

Peerless Electric blowers—belt and direct drive types—are designed and engineered from more than 50 years of experience in building quality motors and electrical apparatus. Peerless Electric equipment is complete—manufactured entirely in our own modern plant—*not an assembled line*—and priced right, offering bigger profits to you.

Write for detailed information.

DIRECT DRIVE
Peerless Electric
AIRBOY PACKAGE UNIT

Delivers 850 cfm, sufficient for a house of approximately 10,000 cu. ft.; 3-speed motor with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced; a very compact unit. The two motor bearings are the *only* bearings in the unit.

THE Peerless ELECTRIC COMPANY
WARREN, OHIO
Established 1893

group, Sterling F. Smith of Mills was named vice chairman, and H. C. Morrison of Curtis was elected treasurer.

Other manufactures who are members of Rema will make individual decisions as to whether or not they will participate.

The Refrigeration Condensing Unit Manufacturers Association is planning to carry on an engineering activity, a sales survey program in cooperation with jobbers and refrigeration service engineers, an export activity, and will offer its assistance to the government in connection with the war effort and will cooperate with the government, if called upon, to assist in the disposal of surplus stocks.

The RCUMA plans to gather sales statistics monthly, which it is believed will assist in showing the trend back to civilian production. A public relations committee will also be appointed.

◆

Compensation Group Insurance

Early in 1940, a committee of the New York State Sheet Metal, Roofing and Air Conditioning Contractors Association, Inc. was appointed to assist in the organization of a New York State Fund Compensation Group. The objective was to reduce accidents and to take advantage of a provision of the New York State Insurance Law which permits the State Fund to group the experience of organizations in similar lines of business. Such groups customarily receive an initial discount in rate and return to the various group members by way of dividend all or a portion of the savings effected, if any.

The committee appointed Laverack & Haines, Inc., a safety and claims organization with head office in Buffalo and a branch in Albany, New York, to act as managers of the group, at an agreed fee, being a percentage of the premium payable by each member.

Final organization was effected in 1941 and as of April 1st, 1942, the end of the first group year, there were 45 members of the Association securing their compensation insurance in this manner.

The first annual accounting revealed a cash saving to each member of 23⅓ per cent, after absorbing the management fee. Total saving including surplus 36.99 per cent. $49,776.86 in net premium written. $7,903.40 was passed to group surplus which, if the group be dissolved, is divided pro rata amongst the then members.

As of April 1st, 1944, the last accounting period, membership had increased to 73 and net premium to $91,283.53, group surplus to $33,916.06, dividends to 30 per cent per annum and cash savings to members of 32 per cent. Saving including surplus 42.3 per cent.

Before being invited to join the organization each prospective member must be approved by a member of the Executive Committee, which annually is elected by the membership as a whole, and in addition must be approved by the engineering staff of the management.

Inasmuch as each risk insured is merit rated by the New York State Compensation Rating Board it follows that, in addition to the above indicated very large savings, a majority of the individual members also enjoy so called merit credits.

Excellent results have been obtained by careful selection of members, by well organized safety work and the scrutiny and just settlement of each claim.

The following table is significant:

Cases reported to $1 premium	Accident to $1,000 premium
1941-42 1 case to $193	5.18
1942-43 1 case to 264	3.79
1943-44 1 case to 375	2.67

It is probable, granted that the principles of proper selection of risk, scientific engineering and handling of claims are followed, that any group comprising similar industries can achieve like results.

Should an attempt be made to organize groups in States other than New York, it will first be necessary to find a cooperating insurance carrier and to secure the consent of the Insurance Department having jurisdiction.

An AIRTHERM Direct Fired Unit Heater Will Reduce Your Heating Costs . . .

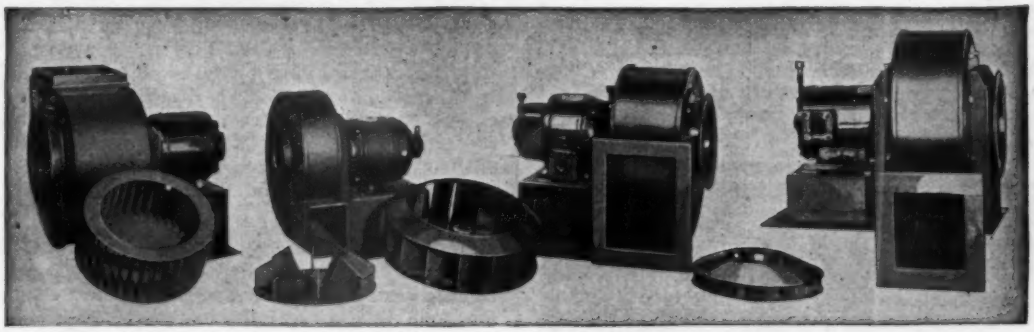
Airtherm Direct Fired Unit Heaters are designed for *efficient, controlled* heat which reflects a saving in your fuel costs. They can be installed in just a few hours without costly duct work, radiators, or pipes. They can be operated only when heat is needed without danger of freezing pipes, thus eliminating costly stand-by operation.

Airtherm Direct Fired Unit Heaters are built in standard sizes, with capacities from 300,000 to 1,500,000 BTU's.

Let us show you how we can reduce your heating costs. Send us your specifications or write for complete bulletin today.

AIRTHERM
MANUFACTURING COMPANY
706 South Spring Avenue • St. Louis 10, Missouri

Johnson **FANS AND BLOWERS** *improved by continuous research*



★ **Johnson Health-aire Propeller Fans and Blowers of various types are now available for industrial and commercial users. And back of every one of these products is the cumulative "know-how" growing out of more than twenty-five years of constant research, experiment, improvement, perfection. New units were created and added to the expanding line to keep pace with every modern requirement. Johnson engineers have solved literally thousands of ventilating and air-handling problems—their counsel is available to you at all times to help produce "climate as you like it."**

*BLOWERS (above) available from 6" to 50".

JOHNSON FAN & BLOWER CORP. • 1319 W. Lake Street, Chicago, 7, Illinois

Sturdy-Dependable . . .

Sampsel
Damper Controls

The Sampsel Damper Control, like all Sampsel products, is precision-built in every detail! The rugged motor is designed for long life . . . built-in transformer permits easier installation . . . arms are adjustable to fit any requirement. Modern ivory finish. Moderately priced!

Shown is one of the Sampsel units for hand-fired furnaces and boilers, No. 8874. It includes Sampsel Day-Night Thermostat for maintaining different temperature levels during the day and night, Sampsel Damper Control and Sampsel Warm Air Limit or Bonnet Control, plus accessories. Sampsel Controls are supplied individually or as complete packaged units.

No need waiting! Sell the profitable line of Sampsel Controls. Send today, for the Sampsel Catalog of complete line . . . prices . . . nearest distributor! Write today!

SAMPSEL TIME CONTROL, Inc.

SPRING VALLEY, ILLINOIS

Sampsel
AUTOMATIC CONTROLS

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 110.

151—Machining Zinc Alloy Die Castings

The New Jersey Zinc Company, 160 Front Street, New York 7, is distributing a revised edition of the bulletin entitled "Practice in Machining Zinc Alloy Die Castings;" 68 pages of technical data.

Contents include bending and forming, buffing, composition and properties, grinding and polishing, punching, riveting and staking, and spinning.

◆

152—Financing the Home

The Small Homes Council, Mumford House, University of Illinois, Urbana, Illinois, offers Circular No. A1.3—"Financing the Home" or how much can a family afford to pay for a house.

Prof. R. M. Nolen, University of Illinois Economist, has worked out a simple system, including taxes, insurance and other upkeep, and conservatively estimates $20 a year per $1,000 of value for upkeep. Recommendations are included.

◆

153—Deoxidine Data Sheets

American Chemical Paint Company, Ambler, Pa., is offering revised technical service data sheets for the use of 210 Deoxidine both as an immersion process and as a spray application for the simultaneous cleaning and conditioning of steel products to properly prepare them for durable paint finishes. A third data sheet covers Titration of Deoxidine bath containing 210 Deoxidine to determine the concentration of 210 Deoxidine in operating and maintaining a 210 Deoxidine solution.

◆

154—Plastic Fan Blades

Burden Fan and Blower Co., 8619 West Third Street, Los Angeles 36, California, is distributing a catalog sheet covering their plastic fan blades—quiet propeller type.

This product is available in three types: Type F with four flat overlapping blades, available in 8, 10, 12, 14, 16, 18, 20, 22 and 24-inch diameters. Type C is similar except that blades have a curved tip and is available in the same sizes. Type CL—clover-leaf pattern—is made without a spider. Blade attaches directly to hub and is available in 6, 8, 10 and 12-inch diameters.

◆

155—Guide 1945—23rd Edition

The 23rd edition of the *Heating, Ventilating, Air Conditioning* Guide published by the American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York 10, N. Y., is ready for engineers, architects, students, and the heating, ventilating and air conditioning industry.

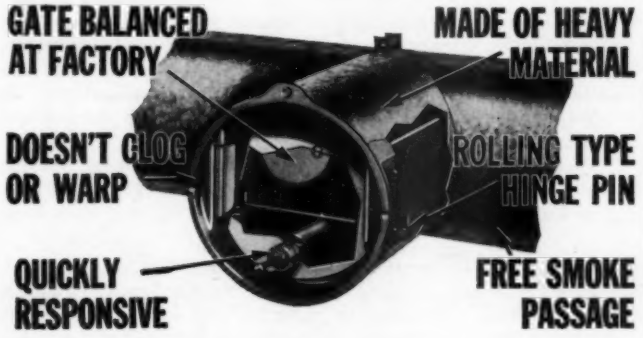
A 15-page detailed index, a single page quick reference table of contents, and a brief summary of chapter contents under each chapter heading provide easy reference.

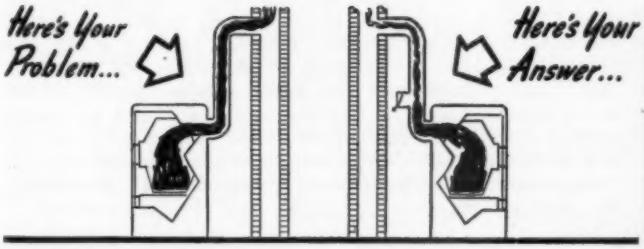
The Guide contains 48 chapters of technical data and information grouped under the general sub-divisions, Principles; Heating and Cooling Loan Calculations; Combustion and Consumption of Fuels; Steam and Hot Water Heating; Air Heating, Cooling and Conditioning; Automatic Controls, Instruments and Motors; special Applications and miscellaneous. A change in format has increased the amount of text per page and consequently much useful information has been added.

The 1945 edition was compiled by 47 Society members and other engineers working under the supervision of the Guide Publication Committee.

The book retains its familiar size (6x9) and external appearance and is bound in a blue cover stamped in gold and is available at $5.00 per copy.

● **Fuel savings range up to 25%, heat is more even, more steady — with a FIELD DRAFT CONTROL on the job. But be sure it's a FIELD you install. For the most accurate, most durable, most dependable draft control made today is the FIELD DRAFT CONTROL. It is used as a standard of comparison with manufacturers, dealers and consumers. Write us today for full information.**





● **Excessive chimney drafts (found in 9 plants out of 10) draw valuable heat up the chimney. But the FIELD DRAFT CONTROL holds these drafts *at all times* to a minimum, thereby saving critical fuel and increasing heating plant efficiency.**

field

CONTROL DIVISION OF H. D. CONKEY & CO.
MENDOTA, ILL.

60 MM. MORTAR SHELL

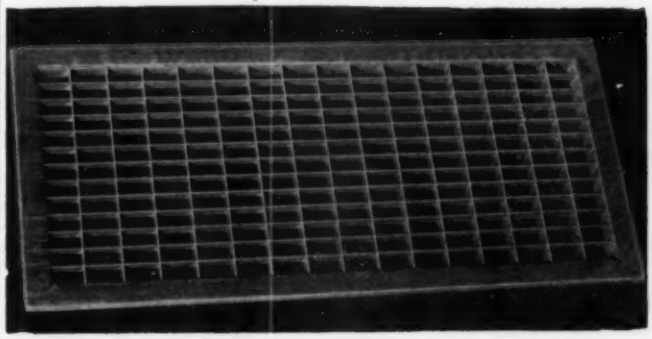
These MUST come FIRST!

In spite of V-E Day our facilities are still 80% engaged in war work and probably will continue so until the Japs are licked. Our fighting forces must be supplied FIRST! And that means that we will be hard pressed to service our established register customers until manpower and steel are in more plentiful supply.

To help us and yourselves, too, be sure to order in conformity with Bulletin S-95. This lists all items now being manufactured. And by adhering strictly to it you will assure the best service possible under present conditions. Standardize now on the sizes of "NO-FLEX" Return Air Faces recommended by the National Warm Air Heating and Air Conditioning Association:

4 x 14	8 x 14	10 x 30	14 x 24
6 x 10	8 x 24	12 x 14	14 x 30
6 x 12	8 x 30	12 x 24	18 x 24
6 x 14	10 x 12	12 x 30	18 x 30
6 x 30	10 x 24	14 x 16	20 x 30

Ask your jobber or write for copy of S-95.



H&C

HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of Registers, Grilles, Furnace Accessories

HOLLAND • MICHIGAN

. . . shortcut to Furnace Repairs

On those calls due to cracked or burned-out firepots simply grab a hammer, trowel, and Fireline.. Fireline is your shortcut to furnace repairs—no more waiting for castings, no more losses through changed models and bootleg misfits, no need to carry all kinds and sizes of firepot castings.

Here is a fire brick in plastic, putty-like form that is readily moulded to any shape. Fireline forms a gas-tight lining entirely around the firepot—seals all cracks and holes; prevents escape of gas, odors, and soot into the building. It is also used for replacing fire tile in steel furnaces, for setting stokers, for oil burner combustion chambers. Withstands 3,000 deg. F.

Fireline is highest-quality industrial refractory material adapted for stove and furnace repairs. Available immediately from jobber stocks. Write for bulletins, prices, and name of nearest jobber.

WHAT FIRELINE DOES

- Salvages burned-out firepots
- Protects good castings
- Saves fuel for owner
- Saves metal for the war

Fireline is installed through the furnace door in a jiffy.

KEEP A DRUM ON THE TRUCK!

FIRELINE STOVE & FURNACE LINING CO.
1816 Kingsbury Street (Dept. F), Chicago 14, Ill.

FIRELINE
STOVE AND FURNACE LINING

New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

156—Furnace Setting Directions

Front Rank Furnace Company, 2500 Ohio Avenue, St. Louis 4, has recently completed two direction pamphlets—one covering gravity furnaces (series E and F) and the other special supplementary directions for square cased jobs.

◆

157—Wood Fiber Blanket Insulation—TS-3955

Division of Trade Standards, National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C., is circulating to the trade—producers, distributors and users of wood fiber blanket insulation—for consideration, Recommended Commercial Standard for Wood Fiber Blanket Insulation (for Building Construction), TS-3955. The draft has been revised and is being circulated for written acceptance, in order that it may become more widely effective through establishment as a commercial standard and publication by the Department of Commerce.

◆

158—Gas Control Bulletin S1-100

General Controls, 801 Allen Ave., Glendale 1, California, has just published a new and instructive manual on the application and operation of automatic gas heating controls. The bulletin, consisting of 32 pages bound with cover, includes many applications of gas control valves, with detailed drawings showing their specific applications on various hook-ups. The drawings are made in perspective to permit easy interpretation.

A feature of the bulletin is a presentation of service troubles that may occur. In addition to these troubles, possible causes of the trouble and remedies are indicated.

◆

159—Automatic Controls

Sampsel Time Control, Inc., 600 North Strong Avenue, Spring Valley, Illinois, is distributing envelope stuffers covering their automatic controls for hand-fired furnaces—a Sampsel thermostat for the living room wall connected by concealed wires to the damper motor; the Sampsel damper control located near the heating plant, one arm of the motor connected to the draft by means of chain and pulleys, and the other arm connected to the check damper; and the Sampsel warm air limit or bonnet control installed in the bonnet of the furnaces to regulate and limit the heat of the furnace. These coal saving controls come in packaged units complete with accessories for installation.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

32	33	34	35	36	37
151	152	153	154	155	156
157	158	159			

Name .....

Company .....

Address .....

Are you Manufacturer——Jobber——Dealer——

FRONT RANK Furnaces Have the Features! Look for more in future ads.

HEATING FRONT RANK SYSTEMS

It Entirely Eliminates the Direct Draft Damper!

Yes, that troublesome gadget, the "direct-in-direct" damper, has been entirely eliminated in the super-efficient FRONT RANK crescent radiator.

As a result, this improved radiator not only assures the long fire-travel so necessary for efficiency, but also positive draft, without which a damper would be required.

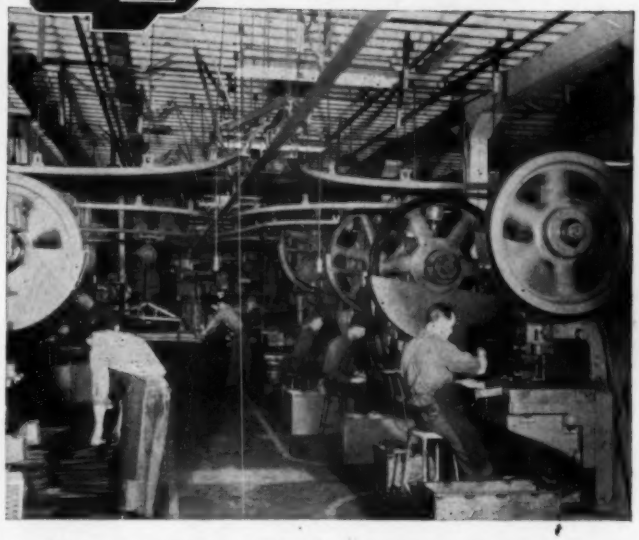
In the above cut-away illustration, note how the flow of the hot gases is controlled throughout its long travel—how the gas passages are proportioned just right to cause a positive draft—how the cleanout is shaped and located to enable the home-owner to easily keep the radiator surfaces clean.

Dealers—FRONT RANK has the *features* that mean Sales and Profits for YOU. *Order from your Jobber.*

Member National Warm Air Heating & Air Conditioning Association

FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS 4, MO.

U S PRODUCTION RAPIDLY CLIMBING

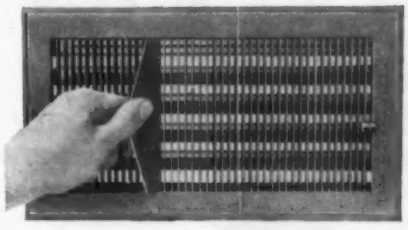


As fast as steel allotments and manpower permit, production on U. S. Registers is going up—without interfering with war orders. Same Superior STANDARD of Design and Manufacture you have always received from U. S.

No. 40 SERIES

GRAVITY BASEBOARD REGISTERS

These are the LEADERS today—and will be postwar. Two-piece construction—removable center with permanent engaging turn-buttons. No loose screws to LOSE. Non-vision interior. Neutral-tone Exclusive METALAC finish.



No. 256 4-WAY FLOW A-C REGISTER

Complete, versatile control . . . Beautiful Exterior! Vertical grille-bars can be set to desired lateral airflow with bending wrench. Lever-operated horizontal rear valves for upward or downward deflection.

ARE YOU READY FOR THIS SEASON'S BUSINESS?
Get Yourself Set and Place Your Register Orders Early. Send for latest catalogs and price lists.

Catalog 41G Gravity Lines
Catalog 41AC Air Conditioning Lines
Catalog 41F Pipe and Fitting Lines

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

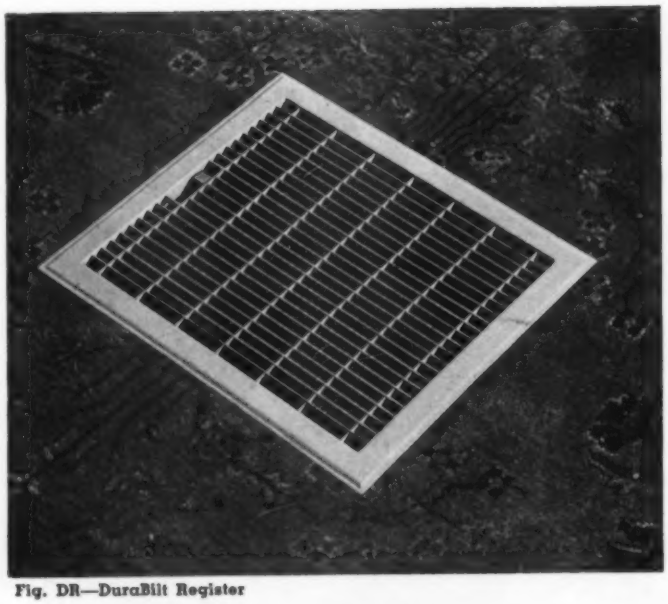


Fig. DR—DuraBilt Register

DURABILT

Floor Registers and Intakes

These registers and intakes are accurately assembled with heavy flat steel bars, mortised and interlocked at every cross-joint. This grille assembly is tenoned and locked tightly into welded and reinforced frame, making a highly rigid and durable construction. Open area is 81%. Now furnished in narrow mesh as standard for all sizes. Auer DuraBilt Floor Registers and Cold Air Forces are an improved product, both in appearance and service. The 7/16" by 1-15/16" opening is heel-proof, excludes small objects such as chair legs, and tends to conceal the register box interior. For structural strength—use DuraBilt Registers and Intakes.

Write for complete Auer Register Book, showing all models for air conditioning and warm air systems. Special Grille Catalog "G" also sent on request.

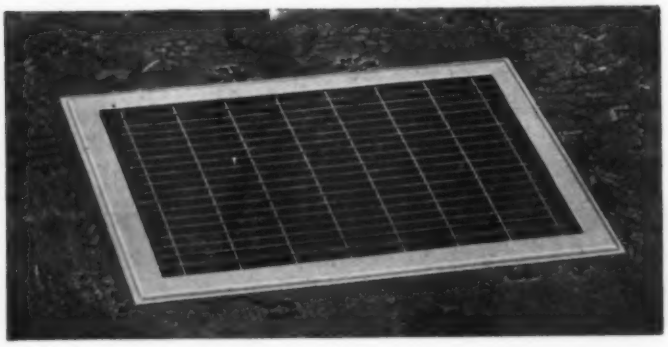
AUER REGISTERS & GRILLES

For Air Conditioning *and* Gravity

The Auer Register Co.

3608 Payne Ave.
Cleveland 14, O.

DSC—DuraBilt Cold Air Face



With the Manufacturers

Westinghouse Shortens Name

Westinghouse Electric and Manufacturing Company, Pittsburgh 30, Pa., has adopted a shorter name—Westinghouse Electric Corporation. For the sake of simplicity and brevity, the Board of Directors recommended the change some time ago. When stock reclassification made it necessary to print new stock certificates, it seemed appropriate to adopt the new name at the same time. To conserve paper, however, the name change on most company printed forms will be made gradually, as existing stationery supplies are exhausted.

◆

Payne Service Club Banquet

The annual Service Club banquet for employees of Payne Furnace Company, Beverly Hills, California, was held recently. Jimmy Gleason, star of stage and screen, was master of ceremonies.

E. L. Payne, president of the company, extended a greeting to the new club members. The recent merger of Payne Furnace Company with Dresser Industries, Inc., Cleveland, Ohio was the subject of a talk given by Lyle C. Harvey, vice-president and director of Dresser. Harvey stated, "Payne Furnace Company will continue to be run as a separate company and will lose none of its individuality by joining Dresser."

◆

Aeroil Changes Name

Aeroil Products Company has been adopted as the new name of the organization formerly known as Aeroil Burner Company of West New York, New Jersey, manufacturer of oil-fired industrial equipment since 1917 and in recent years also in the gas-fired and electrically-heated equipment fields.

Production will be continued on the line of "HEAT-MASTER Kettles" and "No. 99 Weed Burners and Maintenance Torches" which represent a major portion of the production output of the three Aeroil plants in New Jersey, but added emphasis will be given to new types of equipment for which research and development is now under way.

The management announces that the new name avoids the apparent contradication in the word "Burner" as applied to the many different types of electrical units now being produced by them.

◆

Expansion Planned for Lamneck

Perl S. Miller is announcing his retirement coincident with the sale of all Lamneck Products, Inc., Middletown, Ohio, fixed assets and inventories to Clayton & Lambert Manufacturing Company of Detroit, effective June 1, 1945.

Charles F. Lambert, president and general manager of Clayton & Lambert Manufacturing Company, states that the present Lamneck executive personnel, including Messrs. J. Bedford French, R. B. Thompson, Edward H. Paul, and W. S. Somers, will continue.

The Clayton & Lambert Manufacturing Company has been in existence over 55 years, and manufactures firepots, blow torches and metal stamping assemblies.

The new Clayton & Lambert Manufacturing Company's Middletown Division hopes to expand its business extensively and it is anticipated the present plant facilities and personnel will be greatly enlarged.

Products manufactured by Lamneck in peace time for the heating industry consisted of furnace pipe and fittings, air conditioning duct fittings, registers and grilles.

Lamneck employs about 200 people, 75 per cent on war work, balance of production in critical civilian materials.

The Lamneck policy of distribution through jobbers will be continued.

With the Manufacturers

Marlo Coil Enlarges Plant

WPB approval authorizes new building and plant facilities of Marlo Coil Company, St. Louis, adding approximately 14,000 square feet to the present 24,000 square feet plant floor area. Construction has been started and when completed, the rearranged plant will provide augmented production capacity to meet the rapidly expanding demands for the full line of heat transfer equipment Marlo builds.

Part of the space is allocated to an increased production of evaporative coolers for Diesel engines, transformer, cutting and quenching oils; together with improved production facilities for air conditioning, industrial and commercial refrigeration equipment.

This current addition makes the third expansion at 4 year intervals: 1937—12,500 square feet, 1941—24,000 square feet, 1945—38,000 square feet plant floor area.

◆

Personnel

Frank J. Brandenburg, formerly with May Oil Burner Company, Bendix Radio, and Standard Gas Equipment Company, has joined **Fluid Heat Division, Anchor Post Fence Company**, as a member of the development staff.

C. N. Eckhardt, Jr., a 1944 engineering graduate from the University of Maryland, has joined Fluid Heat as a laboratory assistant.

◆

York-Shipley, Inc., of York, Pa., manufacturers of York-Heat, announce the appointment of **Edward P. Fahey** as division manager, Industrial Division of York-Heat, which offers a line of industrial, commercial and domestic oil-firing equipment.

Mr. Fahey was a pioneer in the oil-burning field, starting with the installation of oil-burners in Kansas back in 1911. He held the first Nokol (1920) and Hardinge (1922) franchises in Chicago, and is a past-president of the Chicago Oil Burner Association. Recently he has served as a free-lance consulting engineer.

◆

Robt. L. Sanford

The appointment of **Robert L. Sanford** as District Manager for the **Evanair Division of Evans Products Company** is announced by Al Shields, General Sales Manager of that division.

Bob Sanford represented the Evanair home heating line several years ago, covering at that time the eastern seaboard. For the past two and a half years he has been connected with the Toledo office of the War Production Board as an Appeals Specialist and Inventory Analyst.

◆

O. E. Warring

Appointment of **Orville E. Warring** as factory manager is announced by the **Illinois Iron & Bolt Co.**, Carpentersville, Ill., manufacturers of Freeman stokers. Mr. Warring has a broad background of manufacturing and industrial experience, and will devote a considerable part of his time to production engineering in connection with the company's post-war line of Freeman domestic, commercial and industrial stokers.

He comes to his new position from Republic Air Craft Co., Detroit, where he was general superintendent in charge of manufacturing. Previously he held the same position with the Busch Sulzer Diesel Engine Co., St. Louis, Mo.; served as divisional factory manager of A. Y. McDonald Co., Dubuque, Ia., and was foundry engineer for Caterpillar Tractor Co., Peoria, Ill.

THARCO

IS THE *Furnace Cement*

YOU WANT!

YOU want a furnace cement that is made of superior materials, that will not shrink, check or powder. You want a furnace cement that lasts much longer and cuts down furnace failure. You want a furnace cement that is easy to use, that butters on without the slightest difficulty. You want a furnace cement that is continuously checked and rechecked in the laboratory and on the job to be sure that it always meets every requirement.

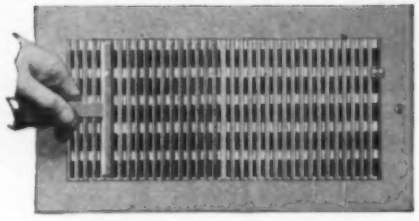
Tharco Asbestos Furnace Cement is "standard equipment" for both furnace manufacturers and furnace repair men because it meets all of these requirements—and more! It is the most economical in the long run . . . it is the furnace cement you want!

THARCO *Asbestos Furnace Cement*

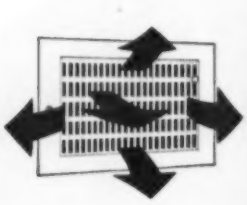
THE ARMSTRONG COMPANY

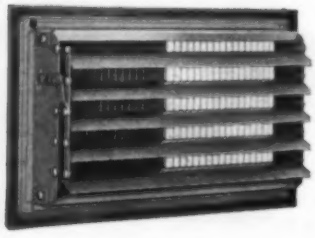
Independent

WROUGHT STEEL REGISTERS PROVIDE 4 WAY ADJUSTABLE AIR FLOW



Design No. 238





Right . . . left . . . up . . . down . . . air flow at any angle desired, in addition to straight outward . . . plus the durable construction which has distinguished Independent products for more than 46 years . . .

These are the reasons for the popularity of this No. 238 Independent Wall Register. Vertical grille bars are manufactured at an angle of 30 degrees, one-half to the right and one-half to the left. They may be bent to direct air flow at any other right or left angle or straight outward. Horizontal multiple valves located at the back of register can be set to deflect air flow up, down, or straight outward. Available in standard sizes 8″x6″ to 30″x8″.

WARM AIR · MOIST AIR · HEAT · CLEAN AIR

Send for Catalog 41-AC

Always Leading—Always Progressing

THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET · CLEVELAND, OHIO

With the Manufacturers

L. E. Schulein, 431 S. Dearborn Street, Chicago, is representing **The Peerless Electric Company**, Fan and Blower Division, in Northern Illinois.

◆

W. B. Connor Engineering Corp., 114 East 32nd Street, New York 16, N. Y., has recently appointed the following in the districts noted to handle Dorex adsorption equipment and Kno-Draft diffusers.

Harry A. Pillen Company, 626 Broadway, Cincinnati 2, Ohio.

The Allen, Mitchell & Company, 1053 31st Street, N.W., Washington 7, D. C.

◆

Viking Air Conditioning Corporation, 500 Walworth Avenue, Cleveland, has appointed **Mark M. Woolworth** to the advertising and sales promotion department.

Mr. Woolworth's former associations were primarily in the news writing field—with the Associated Press in New York and then the Cleveland Press. Mr. Woolworth also did public relations work with the Fisher Body Division of General Motors before joining Viking.—Marion I. Levy, president.

◆

Fred'k W. Stierhoff

Harvey-Whipple, Inc., Springfield, Mass., manufacturers of Master Kraft oil heating equipment, announces the return of **Fred'k W. Stierhoff** as service engineer on special assignments in the New England area. Mr. Stierhoff is well known in the automatic heating trade throughout the eastern seaboard section, having been associated with oil burner manufacturers in that section since 1930. Before that, he was field supervisor for the Shell Eastern Petroleum Company.—Ray G. Whipple, treasurer and general manager.

News Items . . . . . .

Illinois Sheet Metal, Ltd.—fabricators, ventilating engineers and contractors—formerly located at 20 West Kinzie Street, Chicago, is now occupying a new 4-story building at 23 West Hubbard Street, Chicago 10, where modernized and expanded facilities enable them to fabricate any metal product, irrespective of size, thickness or dimension.—Ernest Oberlander, Manager.

◆

Announcement is made of the opening of the Jackson Sheet Metal Works, at 314 Church Street, Jackson, Tenn. S. S. Howard is manager. The management has enjoyed 31 years practical experience. The Jackson Sheet Metal Works will specialize in gutters, sinks, down spouting, air conditioning, general sheet metal and restaurant equipment.

◆

Obituary

William L. Eichberg, 74, head of the sheet metal contracting firm on South Second Street, Memphis, Tennessee, and one of the oldest and most prominent sheet metal contractors in Memphis died May 17, while en route to Methodist Hospital, from his home at 1876 Foster. The firm was founded by Mr. Eichberg's father, John L. Eichberg in 1859. In various years the concern operated as Eichberg and Lang when on Jefferson. They made coffee pots, buckets, tubs, blow pipes, handled roofing and about everything in tin and sheet metal. When moved to South Second Street, the shop was much modernized and has always shown good window displays.

Design of Duct Work

(*Continued from page 77*)

losses ranging from ½ to 1 velocity head in value.

The velocity head corresponding to any given velocity can be derived from the basic equation for the flow of fluids which states that

$$v = \sqrt{2gh}$$

Where v = Velocity in feet per sec.
g = Acceleration of gravity, or 32.16.
h = Head of fluid in feet.

A simplified form of the above equation is:

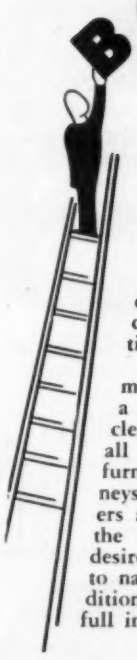
$$I = \frac{V^2}{16\,(1000)^2}$$

Where I = Velocity head in inches of water.
V = Air velocity in duct, in feet per minute.

Transport Velocities

General practice is to design ducts for conveying dust from grinding and buffing wheels, tumbling barrels, sand-blast rooms, stone plants, and similar applications on a basis of a velocity of about 3000 feet per minute. This velocity will also take care of dry sawdust, light wood chips, shavings, sander dust, etc. Grain dust, lint, cotton dust, and similar light materials are conveyed with 2000 foot velocity. At the other end of the scale we have velocities of 4000 to 4500 feet per minute for wet sawdust, heavy wood chips, and of 5000 feet per minute for lead dust.

Exact values of minimum transport velocities based



BOOST PROFITS

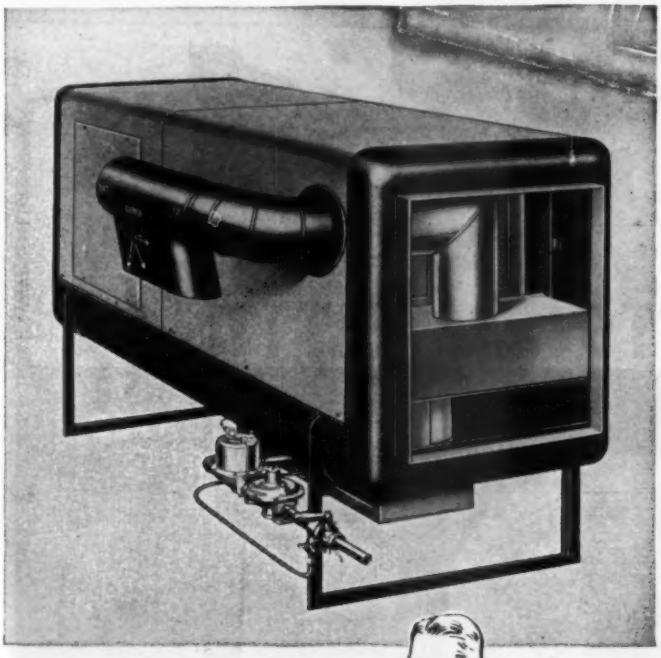
Save VITAL FUEL

You can earn extra profits with a Grand Rapids Furnace Cleaner — and help save precious fuels, now more scarce than ever. Merchandising through your service department is the answer, for it not only enables you to sell new equipment while you clean but also keeps your customers' furnaces in the tip-top repair so essential to economical operation.

Built to give you dependable, efficient service for many years, the Grand Rapids Furnace Cleaner does a complete, thorough cleaning job, removing all dirt and dust from furnaces, boilers, chimneys, stokers, oil burners and heaters — even the entire basement if desired. It's sudden death to nasty "plug up" conditions. Write today for full information.

GRAND RAPIDS FURNACE CLEANER
MODEL OF The Doyle VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.



PAYNE MODELS
meet EVERY heating need

You have the equipment to match the job . . . when you handle PAYNE gas-fired, warm air furnaces. The PAYNEHEAT "line" is complete. To Dealer and Gas Company, this means *more sales* and *satisfied customers*. ★ The "Spacesaver" Unit, like other PAYNE models, reflects more than 30 years' specialized experience. All these models, progressively improved, will again be available . . . as men and materials are released from war production.

PAYNE ZONE-CONDITIONING

Successor to old-fashioned central heating. Winter air-conditioning plus cooling summer ventilation . . . controlled by zones or rooms. *Request new booklet.*

PAYNE FURNACE COMPANY
(One of the Dresser Industries)
BEVERLY HILLS, CALIFORNIA

TIGHT SQUEEZE?
Space at a premium? No basement? Under these conditions, in home, shop, factory or other building, consider the . . .
PAYNE "SPACESAVER" (HU) FORCED AIR UNIT

PAYNEHEAT
OVER 30 YEARS OF LEADERSHIP

GAS FUEL (HAS) EVERYTHING

on test data are meager and there are usually unknown factors such as size and shape of particles, density, and lowered operating velocities under part load operating conditions. It can be stated as a general rule, however, that the required transport velocity increases with any increase in density of the material and it also increases with any increase in particle size. DallaValle has expressed this relation in the following equation:

$$V = 54{,}700 \left(\frac{S}{S+1} \right) p^{0.57}$$

V = Velocity, feet per minute, for vertical transport of material

S = Specific gravity of the material

p = Particle diameter, in feet

For practical purposes this formula may be written:

$$V = 54{,}700 \left(\frac{S}{S+1} \right) \sqrt{p}$$

DallaValle's formula for horizontal transport shows considerably lower values than for vertical transport; however, the usual practice is to make no distinction between vertical and horizontal transport.

As vapors and gases mixed with air may be moved at any convenient velocity, pipe sizes for such applications are determined by consideration of economy, of size, and power consumption.

Conveying Capacity of Ducts

The quantity of solid material which can be conveyed in suspension in an air stream flowing in a duct is dependent upon the physical characteristics of the material, size of particles, density, and the volume of air flowing. Fine materials require more air than coarse materials. Heavy materials are moved with less air than low density materials. Experience has shown that with air velocities from 25% to 50% above the minimum transport velocities it requires 50 to 100 cubic feet of air to convey one pound of material.

Dust concentrations in exhaust ducts are usually much below the maximum and ordinarily it is not necessary to check the duct size against the quantity of material to be conveyed. However, in unusual cases, where the concentrations are high for any reason, as is the case where materials from several collectors are discharged into a separate exhaust system for transport to final destination, it is necessary to provide a duct of sufficient size to obtain an air flow of from 50 to 100 cubic feet of air per pound of material conveyed.

Construction

Duct work for exhaust systems is usually fabricated from galvanized sheet iron, the gauges of which vary with the diameter of the duct and the suction at the fan. For low suction systems (up to 10 inches of water at the fan intake) the following gauges are recommended:

Small size ducts, 22 gauge

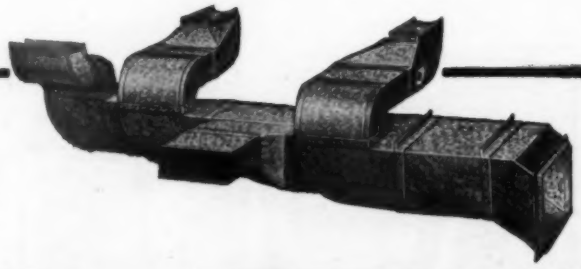
Ducts 16″ to 24″ diameter, 20 gauge

Ducts 25″ to 34″ diameter, 18 gauge

Ducts above 34″ diameter, 16 gauge

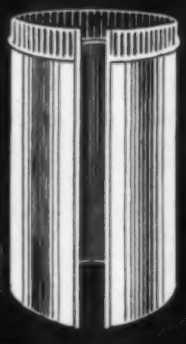
Exhaust ducts which handle large quantities of highly abrasive materials require heavier gauges.

CHAR-GALE



● Because they're already engineered to save you time and trouble, you can make extra profits with Char-Gale "Pre-fabricated" Ducts and Fittings. Made by standard mass production methods . . . all sizes are accurate . . . no delays on the job. Try us on your next installation.

Pre-Fabricated DUCTS *and* FITTINGS

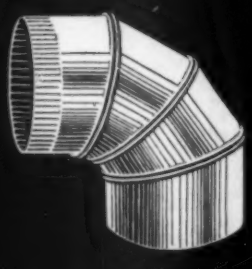


SMOKE PIPE

◀ Backed by years of experience, the Char-Gale double offset lock gives continuous satisfaction.

ELBOWS

Easy to adjust . . . extra large segments . . . won't come apart. Char-Gale elbows are trustworthy. ▶



PRE-FABRICATED AIR DUCTS

▲ The "quick-method" chart in the Char-Gale catalog gives accurate sizes for any job and figures costs for you. Send for it.

CHAR-GALE MANUFACTURING CO.

CATALOG NO. 40

For complete information on smoke and stove pipe, elbows, warm and cold air pipe, registers and air filters write CHAR-GALE Mfg. Co., 3125 Hiawatha Ave., Minneapolis 6, Minn.

High suction systems also require heavier gauges or the ducts may be reinforced with band or angle iron.

Heavy welded black iron ducts with flanged and gasketed joints are recommended for extremely abrasive conditions such as granite dust, etc., or where the ducts are subject to external injury or have to be taken down occasionally.

Corrosive Conditions

For corrosive conditions ducts may be of cast iron, lead, copper, stainless steel, monel metal, aluminum, tile, or other special material. Ducts may be lined with lead or rubber or painted with acid resisting paints. Tile ducts are to be avoided due to danger of breakage and leakage.

Sheet metal elbows should be two gauges heavier than the ducts to which they are attached.

The main trunks and branch ducts should be as short and as straight as possible. They should be strongly supported and protected against possibility of damage by moving equipment. The dead ends should be capped to permit inspection and, unless space will not permit, elbows should be long turn with a center line radius equal to one and one-half times the diameter.

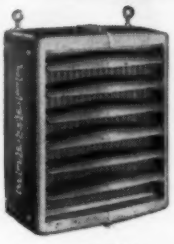
Where a movable section of duct is required flexible metal hose, ball or slip joints may be used.

Floor sweeps should always be connected to vertical risers so that all material passing through them will be lifted from the floor by suction, thereby avoiding the possibility of large pieces being swept into them and blocking the system. They should also be equipped

"Use CLARAGE PRODUCTS and Repeat Business Comes Easy!"

This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. *Write for catalog covering complete Clarage line of fans, blowers, unit heaters, coolers and conditioning units.*

FURNACE FANS



UNIT HEATERS

EXHAUST FANS

ARMY E NAVY

COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

Clarage Fan Company Kalamazoo, Mich.

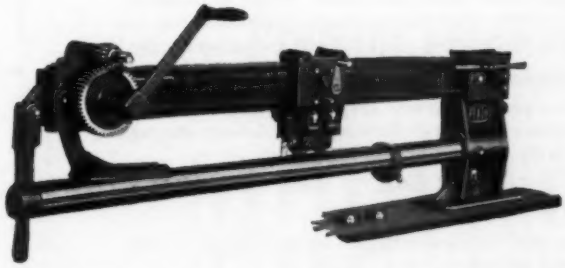
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

PEXTO

Built for . . .

TOUGH JOBS

Closely following the battle lines on land and sea PEXTO Machines and Tools are meeting every critical situation in the reshapement and replacement of damaged material.



GROOVING MACHINES, HAND AND POWER

THE PECK, STOW & WILCOX COMPANY — Since 1785 — SOUTHINGTON, CONNECTICUT, U. S. A.

Here's why Reznor suggests you allot some time of your busy days to checking over Reznor installations in the plants and stores of your town. These tune-ups give you an opportunity to talk heating to your customers. You can show them what they need and book orders on the spot for delivery when equipment is available.

That's the immediate return of tune-ups. Then you have an added benefit—people will like to do business with you if you show consideration for them.

To make your tuning-up, inspection and cleaning job as easy as possible, we have drawn up this simplified check list for your use:

✔ HERE'S EASY-TO-USE CHECK LIST FOR REZNOR GAS-FIRED UNIT HEATERS

1. Check electrical connections for loose wires, insulation breaks.
2. Inspect gas connections.
3. Look over thermocouple. (If corroded, it should be cleaned with fine emery cloth. Otherwise, a simple brushing is all that is necessary. When reinstalling, make certain that thermocouple lead clamping nut on top of Baso safety pilot valve is pulled up snugly.)
4. Remove bottom pan and clean.
5. Remove and clean pilot. Inspect burners. If cleaning is necessary, suggest blowing out burners through ports with air hose.
6. Look at inside of tubes. If dirty, they should be wiped clean inside and out.
7. Motor and fan blades should be wiped free of dust, lint, and grease.
8. Reassemble and check operation.

NOTE: The average time required to check a Reznor Unit Heater is 15 minutes, except when it is necessary to clean out burner ports and the inside of the tubes. These operations require a little more time.

REZNOR REZNOR MANUFACTURING CO.
602 JAMES ST. - MERCER, PENNA.

"GAS HEATERS EXCLUSIVELY SINCE 1888"

with tight fitting blast gates. (For typical floor sweep see Fig. 5.)

Ducts installed outside of buildings and which carry moist hot air should be insulated with roofing paper to prevent condensation in cold weather. Very long runs of outside ducts should also be provided with expansion joints.

All ducts passing through roofs require weather caps to prevent water leaking into the building.

Branch ducts should lead out of the hoods at the point where the materials to be conveyed are directed naturally by the operation of the apparatus.

All branches should join the main at an acute angle with the incline in the direction of the air flow (see Fig. 6). The junctions should be at the side or top and never at the bottom of the main; nor should two branch connections be placed directly opposite each other. Branch ducts should not project into the main.

All permanent circular joints should be lap jointed, riveted, and soldered, and all longitudinal joints either grooved and locked or riveted and soldered. Circular laps should be in the direction of the air flow, and piping installed out-of-doors should have the longitudinal laps at the bottom.

Cleanout openings having suitable covers should be placed near the bottom of all risers and at other points in the mains and branches so that every part of the system can be reached easily in case the system clogs. Either a large cleanout door should be placed in the main suction pipe near the fan inlet or, preferably, a detachable section of duct held in place by lug bands should be provided. Tight fitting blast gates should be installed at each hood connection.

Increase in duct size should be made on a taper and not by an abrupt change in size. Branches should enter the main at or near the point where the size changes in order to avoid the possibility of an oversize section and too low an air velocity.

All ducts should be smooth on the inside and free from projections, fins, or rough spots. No screens or other obstructions should be placed in the branches or main ducts, with the exception that cones or other adjustable devices for equalizing the air flow may be placed in the branch ducts close to the points where the ducts join the exhaust hoods. Where such equalizing devices are used they should be of substantial construction securely fastened in place and should not have any projections on which material may catch.

Equalizing devices should not be used where the materials conveyed are extremely abrasive.

Codes

The duct design should be checked to see that it complies with any state or insurance codes effective for the location and type of exhaust system under consideration. The more important codes to be considered are:

(1) State codes covering the design and installation of exhaust systems—obtainable from state industrial or labor departments.

(2) Fire underwriters regulation for the installation of blower and exhaust systems, published by the National Fire Protection Association, 60 Batterymarch Street, Boston, Mass.

(3) Safety codes for the prevention of dust explosions—published by the American Standards Association, 29 West 39th Street, New York City.

Army-Navy Termination Regulations

(*Continued from page* 79)

ing Office is requested to furnish the contracting officer within 60 days all relevant information which has come to the attention of that office in connection with its audit of the contract. Unless the information indicates that there are exceptions of the General Accounting Office, the contracting officer is then in a position to negotiate the final settlement. If exceptions are still outstanding, an additional period of 30 days is allowed for their clearance. Contracting officers are not authorized to include in the settlement any costs which are the subject of uncleared exceptions, but may refer such matters to the Under Secretary of War or the Secretary of the Navy for instructions.

Other Important Changes

The method of calculating interest payable to war contractors is simplified and condensed (570-577). Cutback procedures in the War and Navy Departments have been substantially modified to reflect and implement recent regulations and directives of the Office of War Mobilization and Reconversion and of the War Production Board (230-238). In the field of termination inventory (400-497), a number of changes were made to clarify and improve existing procedures, but no fundamental modifications were made pending issuance by the Surplus Property Board of new price regulations.

COMFORT . . .

THAT'S EASY TO SELL and EASY TO INSTALL

Brundage BLOWER FILTER PACKAGE UNITS

Ahead of the field for over a quarter of a century, *Brundage Blowers* need no redesigning to meet increased static pressure specified in the new mechanical code.

Blower Specialists Since 1919

THE Brundage COMPANY

KALAMAZOO 11 MICHIGAN

Here's The Man Who'll Dominate The Post-War Heating Business — He's the

Independent Furnace Dealer

We predict that 95% of the post-war home air conditioning will be sold by Independent Heating Dealers. The Independent Furnace Dealer alone has the knowledge and experience required to make good heating installations. His broad experience assures home owners of more dependable, more economical and safer heating installations.

Premier will continue to back the Independent Furnace Dealer, in the future as in the past. Premier equipment will be sold through Independent Furnace Dealers.

Every Premier dealer receives exclusive territory protection, effective selling and advertising helps, and the assistance of factory trained field engineers. Every Premier dealer will have the advantage of a complete line of home-comfort equipment — everything required for warm air heating, air conditioning, automatic fuel burning, and cooling.

Write today. The exclusive Premier Post-War Franchise may be open in your territory.

Premier Furnace Co.
Dowagiac, Michigan

PREMIER

Cast Iron Furnaces . . . Steel Furnaces . . . Winter Air Conditioning . . . Oil Burners . . . Blowers . . . Stokers . . . Cooling Equipment . . . Humidifiers . . . Registers . . . Ductwork . . . Automatic Controls

"We must stop this with 'spot' ventilators in our new postwar home."

Blo-Fan
CUSTOMERS ARE WAITING FOR YOU!

POSTWAR HOMES—particularly those with forced air heating and air conditioning—must be rid of unwanted air before it can spread. Greasy vapors, smoke and fumes are unhealthy. They soil draperies and furnishings; run up cleaning bills.

Blo-Fan "Spot" Ventilators eliminate this trouble *at the source!* The patented combination of breeze fan and blower principles gives the Blo-Fan *volume plus power.* Ceiling installed—over the spot where odors and vapors originate—a Blo-Fan is twice as effective as a similar size fan in a side wall across the room.

The propeller blades of the Blo-Fan supply the blower portion with the maximum air it can discharge through the duct . . . That's why Blo-Fan is so remarkably efficient!

Here is a new and profitable market for the electrically licensed heating and ventilating contractor. Prepare now to sell

Blo-Fan
"SPOT" VENTILATOR

It's a No. 1 "must" for new residential work and modernization jobs alike. *Send for FREE booklet today.*

PRYNE & CO., INC.
1245 E. 33rd STREET • LOS ANGELES 54

BRANCHES (TO BE RE-ESTABLISHED AFTER THE WAR)
SAN FRANCISCO • SEATTLE • CHICAGO • NEW YORK

"Spot" Ventilation MEANS Blo-Fan

Canadian Chapter NWAH&AC Ass'n School

(*Continued from page* 85)

quet at the King Edward Hotel on Wednesday evening. On Tuesday and Thursday evening, from 7 to 9:30, members of the Engineering Committee assisted those with problems arising from the lectures.

The University was enthusiastic about the school, with Prof. A. E. Allcut, head of the Department of Mechanical Engineering of the University cooperating with the Engineering Committee of the Association in preparing the program and finalizing the details. The association feels that the school is a step toward higher standards in the warm air heating field in the Canadian market.

A limit of 50 delegates was set by the University as the maximum number they could accommodate—housing, feeding out-of-town students at nominal rates.

It is the intention of the Canadian Chapter that all receiving training at this school will in turn act as instructors in schools that will be held at strategic points throughout Canada from time to time, at which installers and dealer salesmen can receive similar instruction.—A. W. Given, Chairman Publicity Committee.

◆

Air Duct Friction Studies

(*Continued from page* 70)

tion chart be prepared based on Moody's work, published in November, 1944, in the Transactions of A. S. M. E., using a value of .0005 ft. for the rough-

SAL-MO ASBESTOS PRODUCTS

QUALITY Asbestos Products for all types of insulation and fireproofing. Asbestos Papers, Millboards, Aircell Papers, and Pipe Joint Tape. Asbestos Cements, Ductboard and Hot Water Tank Jackets. Pipe Covering for steam, hot water and cold water lines.

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SALL MOUNTAIN COMPANY
176 WEST ADAMS STREET CHICAGO 3, ILL.

CHICAGO STEEL BRAKE

BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO 36

ness parameter. This tentative chart is to cover round pipe only, with workmanship and interior smoothness defined.

It was the consensus of opinion that for the present it would be satisfactory to follow the old practice of equivalent rectangular ducts based on the mean hydraulic radius, but it was recommended that a project be set up at the Laboratory as soon as possible to verify, by test, the actual relationship for ducts having an aspect ratio from 1 to 1 to 1 to 6.

It was also recommended that a study be undertaken on losses in elbows, fittings and transformations, the first step being to collect data already available from various sources in the literature, including that developed by the Brooklyn Navy Yard and the NACA.

◆

Manual Guarantees Improved Results

(*Continued from page* 68)

considerably higher than the correct speed for continuous operation. It takes much less power to operate a blower slowly than to operate it at fairly high speed. Therefore, the slow speed blower operating continuously takes only very little more electricity than the higher speed blower operating intermittently.

On the average job it is safe to estimate that continuous blower operation, as contrasted to intermittent operation, will cost in the neighborhood of $1 a month more for electricity. But you turn around and save as much or more than this on fuel because the overall efficiency of the system is higher when there is con-

WHITNEY LEVER PUNCHES

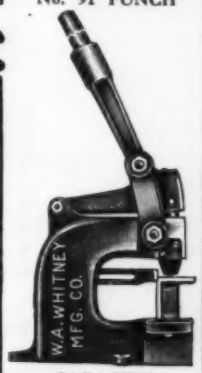
No. 4B PUNCH

Length 8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat—3 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 6 PUNCH

Length—26½ inches. Capacity — ¼-inch hole through 3/16-inch iron; especially adapted for button punching or templet work. Punches and dies ⅛" to 9/32" by 32nds.

No. 91 PUNCH



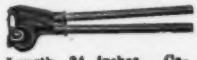
CAPACITY

½-inch hole through ¼-inch iron; ⅝-inch hole through 3/16-inch iron; 2-inch hole through ⅛-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

We have tools for every purpose needed by Sheet Metal Contractors.

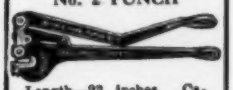
Ask your Jobber

No. 1 PUNCH



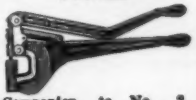
Length—34 inches. Capacity — ⅝-inch hole through ¼-inch iron. Punches and dies in sizes from ⅛ to 9/16 by 64ths.

No. 2 PUNCH



Length—23 inches. Capacity — 5/16-inch hole through ¼-inch iron. Punches and dies in sizes 3/32" to ½-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

If you are developing new post-war *fans, blowers,* or other *air conditioning* equipment—it will pay you to investigate

TRIANGLE
BEARINGS

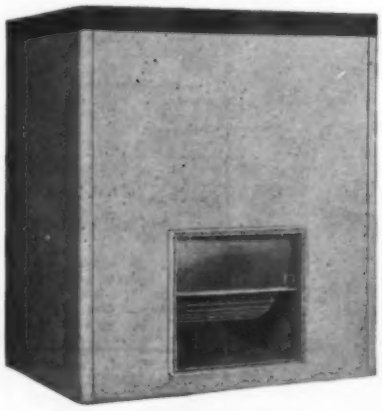
Shock-Absorbing Pillow Blocks

They are silent—vibrationless—self-lubricated—scientifically streamlined for compactness, simplicity, strength and minimum obstruction to air flow.

Write for samples and complete information

TRIANGLE MANUFACTURING CO.
392 DIVISION STREET OSHKOSH, WISCONSIN

UNTIL V-J DAY —



REX Blowers and REX Air-Pak Blower-Filter Units will be available in increasing quantities, depending upon the availability of materials and workman.

New developments, new designs and effective promotional material are now being planned for post-war markets—to help you build a profitable volume.

The dependable, trouble-free and satisfactory service REX Blowers have rendered in the past is your assurance of the same performance in the future. REX Blowers are backed by many years of pioneering leadership in sound blower design and manufacture.

This record, combined with effective sales helps promises an increasing volume of business for alert heating dealers after V-J Day.

Air CONTROLS INC
Div. of
The Cleveland Heater Co.

2313 Superior Ave. Cleveland 14, Ohio

tinuous circulation.

So, in selling a forced air job the dealer should explain that the blower will run almost all the time. Admit that the power cost will be a little higher, but emphasize that the fuel bills will be less. The customer has paid you a lot of money for the system. He buys it for comfort. He cannot get comfort unless the blower runs almost all the time. We find that dealers who have understood the necessity of this kind of forced warm air operation never have any complaints about power bills from their customers because the operation has been properly explained and these people have the best heated homes in their towns and they are intensely proud of their jobs.

Some Dealers Have Led the Industry

You might get the impression from the above remarks that I do not think that any forced warm air jobs have been correctly installed and controlled heretofore. This is not at all the case. I know quite a large number of dealers who have for years understood and practiced the principles now outlined in the new association manual. They have operated blowers constantly and have located registers to allow this kind of blower operation. Even with the prewar controls they have obtained highly satisfactory results. In some cases variable limit controls, manually operated as the season changes, have been used to shorten burner "on" cycles and smooth out or modulate the constant delivery of warmth. In other cases two limit controls have been used with a two-stage room thermostat so that in mild weather the burner would be under very low limit control. In still other cases oversized heaters have been used in heat accelerated ther-

★

Sheet metal men everywhere are turning out accurate work quickly and easily with Niagara machines and tools for shearing, blanking and forming sheet metal.

NIAGARA
MACHINE & TOOL WORKS
BUFFALO 11, N. Y.
District Offices:
Detroit, Cleveland, New York

mostats to speed up the action of the instrument.

Dealers who have installed and controlled their systems in this way have produced highly satisfactory results for their customers. Unfortunately, these dealers have been so few, in relation to the total number of dealers in this industry, that too many forced warm air systems have not produced the quality of results of which they are inherently capable. When dealers, nationwide, learn the principle of installation and control as now taught in the new manual, they can return to jobs previously installed and by very simple and inexpensive changes bring the old jobs up to the new standard of performance.

Proper education of everyone in the installing end of this industry is vitally necessary. Warm air heat is fundamentally right. But it must be installed and controlled correctly, otherwise the home owner will not recognize that it is right. Fortunately, we now have textbook material that really teaches. It is the keystone upon which future development and expansion of this industry can be built.

We Need an Industry Publicity Campaign

When dealers are trained so that they can produce the results that are inherently possible with warm air heat, this industry has a story it must tell to the American public. We have the finest, most practical, most flexible and most economical systems available. A forced warm air job, correctly installed and controlled. will be as much an improvement over the average prewar forced air job as the central warm air furnace was an improvement over the stove.

This industry has a wonderful story to tell the American public now. If they tell it properly and back

REPAIR CHIMNEYS
for a profitable business and a satisfied customer

Install Vitroliner Vent Pipe in old chimneys for longer life and protection.

Vitroliner will correct: 1. DEFECTIVE LINING. 2. SMOKE BACK. 3. LEAKY JOINTS. 4. POOR DRAFT. Can be used for ALL fuels. Ideal for gas or oil fired jobs where CONDENSATION is an important problem.

VITROLINER CHIMNEY LINER is heavy gauge, high quality enameling stock iron and is coated inside and out with special high temperature acid resisting vitreous enamel. Bell and Spigot type joint assures a perfect and uniform fit.

Vitroliner Vent Pipe is easy to install in a few hours. Write for Catalog A-5.

15 Years of Successful Chimney Installations

CONDENSATION ENGINEERING CORPORATION

122 S. Michigan Ave. Chicago 3, Illinois

The "Master" mark on future temperature controls will mean GREATER COMFORT . . . MORE EFFICIENT SERVICE . . . LONGER LIFE.

MASTER
TEMPERATURE CONTROLS

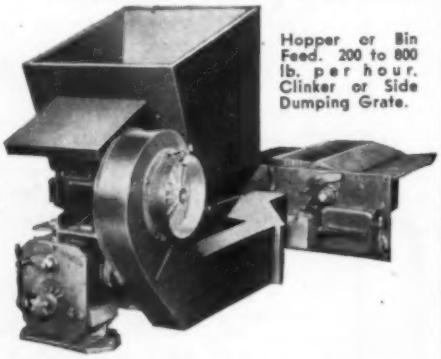
Yes, remember that name with assurance that, when conditions permit us to resume production for civilian needs, we shall be able to offer you Master Controls with improvements in design, workmanship and in functional accuracy. There will be some important new items in the Master line that will provide greater potential sales and profits.

Our star customer is Uncle Sam and he rates the highest priority . . . naturally has first call upon our resources. We are sorry not to be able to take better care of our old friends,—we appreciate their understanding patience,—we promise them improved products and old-time "White Service" at the earliest date possible.

WHITE MANUFACTURING COMPANY 2368 University Ave., St. Paul, Minn.

ROUGH . . . TOUGH . . . RUGGED

FREDERICK Stokers save . . . TONNAGE LABOR and SHIPPING



Hopper or Bin Feed. 200 to 800 lb. per hour. Clinker or Side Dumping Grate.

Built to stand up under the hard usage of industrial installations, the Frederick Stoker is highly regarded and widely used in industry.

Frederick design insures thorough fuel combustion; maximum utilization of heat-giving gases, which results in lower coal consumption. Corresponding conservation of labor is thereby effected, and less coal transported releases shipping for other vital needs.

Frederick engineering features—the fully active grate surface . . . no dead plates . . . continuous speed type transmission and completely enclosed wind boxes and mechanism—are described in our Stoker catalog. Send for it.

WE ALSO MANUFACTURE fine Centrifugal Pumps especially designed for efficient service in a specific industry. Engineering consultation available without obligation.

THE Frederick IRON & STEEL CO.
Frederick, Maryland

STOKER SPECIALISTS SINCE 1918

it up with proper education of all installers and proper policing to be sure that the principles are being followed, there is a glowing future ahead for everyone connected with the warm air heating business.

All manufacturers, jobbers and dealers will do well to get behind the Warm Air Heating Industry Educational and Publicity Program that was announced at the Association Convention in December. It is a worthwhile investment. It will pay big dividends. The stage is properly set now. Our product is right and we know how to install it. We are ready to tell an important story and then produce what we promise. Full cooperation from all members of the industry is essential. With it a new era will start for warm air heating people.

◆

When Your Contract Is Cancelled

(*Continued from page* 59)

tractor, it would be assumed that in making a bid for 10,000 units, you would have included approximately ten cents in your unit price to amortize the $1,000 which the special machine would cost you. Upon termination it is likely that the method used would be as follows:

Original cost of special machine	$1,000.00
Residual value or selling price	280.00
	$ 720.00
Contract 60 per cent completed	432.00
Amount due you for 40 per cent termination.	$ 288.00

So far the Government has been permitting the use of this method, deducting the residual value of the

Premier FURNACE CLEANER

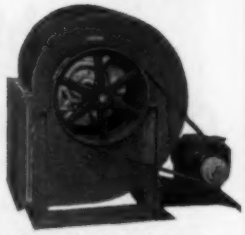
BUILDS UP SERVICE VOLUME!

The sturdy Premier Furnace and Boiler Cleaner works as your best ally in developing service business *in volume*—it gives you first-hand knowledge of needed repairs while it brings you profits on cleaning jobs! It's rugged and powerful, yet compact and light weight—easily carried and operated by one man. Write today for complete information.

NEW IMPROVED MODELS
Completely Equipped
⅙ H.P. . . $74.50
1 H.P. . . $89.50

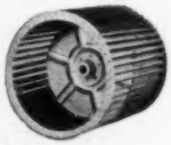
ELECTRIC VACUUM CLEANER CO., INC.
1730 Ivanhoe Rd. • Cleveland, O.

YOUR BLOWER Requirements
AVAILABLE AT
Schwitzer-Cummins Company



★ BLOWERS FOR EVERY PURPOSE
Double Inlet and Single Inlet
HY-DUTY Blowers, 9¼" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ CENTER DISC WHEEL—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".



★ ENGINEERING DATA—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

special facility before calculating the cost on percentage of contract completed. Ordinary cost accounting procedure would be to first calculate the amount of contract completed or 60 per cent on $1,000. This would leave a $400 balance, representing unused portion of the machine. From this $400 would then be deducted the $280 residual value, leaving $120 due to the contractor.

◆

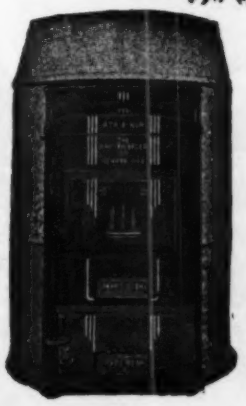
Kruckman—The July 1 Millennium

(*Continued from page* 47)

will preserve anything and everything necessary for war end-users.

After these needs are served, beginning July 1, CMP is open-ended to permit whatever is left to trickle out for the non-war industries. WPB, as Mr. Krug emphasizes, is a war production agency. It has never been intended to supply non-war civilian industries. Ergo, the trickle or stream that may come out of the open-end of CMP is logically not the business whose administration legally comes within the scope of WPB. As it is now arranged, these supplies, whatever they may be, will be there for the non-war civilian industries to take. Apparently he who is most ingenious, or most alert, or who has the quickest pull, and he who gets there first will get the residue that comes out of the open-end. PR-27 is intended to give the smaller unit some advantage. Otherwise, it has repeatedly been said, you scramble for your share. Since there will be only a limited supply for an indefinite time, *when there is any supply at all,* it would

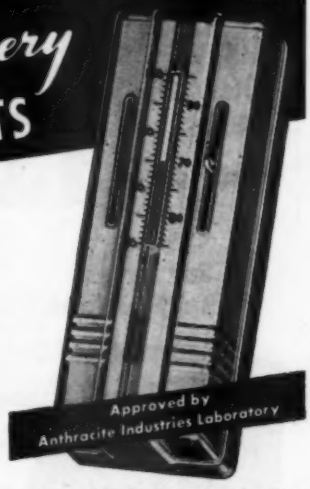
ATH-A-NOR
Furnace Repair Parts



The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

MAY-FIEBEGER COMPANY
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS
NEWARK, OHIO

Satisfied Customers Approve
Gleason-Avery THERMOSTATS



• Gleason-Avery's accurate, *safe* heating control assures complete customer satisfaction. Finger-tip adjustments and synchronized settings afford easy operation . . . exclusive Straight Line Control means no chain-tangling, no sprockets and rotating arms to get out of order.
Absolutely safe (in case of current failure, the improved G-A Spring Return closes draft, opens check). *Easy to install* (can be mounted in any position. 2-wire low voltage.)

No. 130 Furnace Sentry Unit Package for hand-fired domestic heating systems is complete with thermostat (smartly finished in Mirror-Lite), damper motor and accessories, ready to install.
LIST PRICE . . . $19.50

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

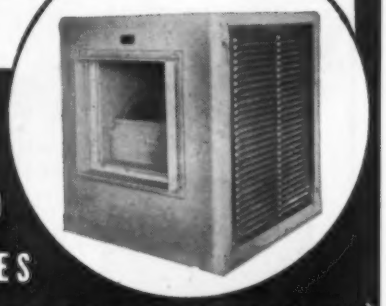
The General Says
ATTENTION
Write today for the complete information which General Blower Co. has prepared for you regarding
GENERAL MULTIBLADE EXHAUSTERS

Ask for Portfolio SC-101—A.A.

DELIVERIES 2½ WEEKS

GENERAL BLOWER COMPANY
Producers of Air Moving Equipment
401 North Peoria St. Chicago 22, Illinois

SNO-BREZE



THE COOLER
THAT'S BACKED
BY 3 DECADES
OF MANUFACTURING EXPERIENCE

For over 30 years Palmer of Phoenix has been continuously making and trying out evaporative coolers in the testing ground of coolers: the Arizona desert... to achieve the perfected 1945 model Sno-Breze.

Palmer
Manufacturing Corp.
Phoenix, Arizona

seem that the ancient rule of tooth and claw will mainly determine the distribution. There are bound to be many who will get left.

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The Facts on Steel Sheets

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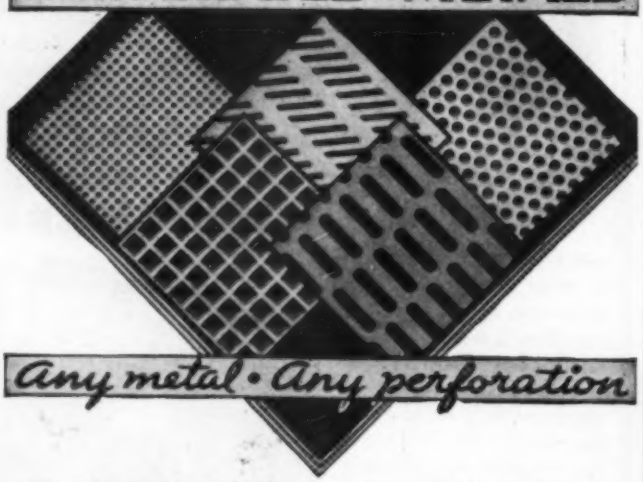
PERFORATED METALS



Any metal • Any perforation

H. & K. Perforated Metals are accurately made and embrace a great variety of perforations for use in screening, grading, ventilating and straining of different substances.

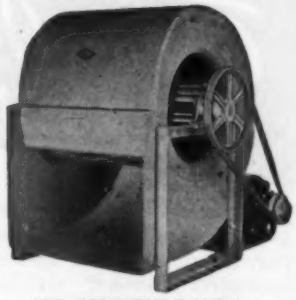
Tell us your requirements and we will send booklet showing actual sizes of perforations.

The Harrington & King PERFORATING CO.
5649 Fillmore Street, Chicago - 114 Liberty Street, New York

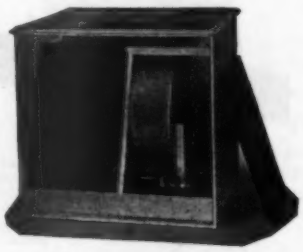
Properaire • AIR MOVING EQUIPMENT

BLOWERS
EXHAUSTERS
FANS

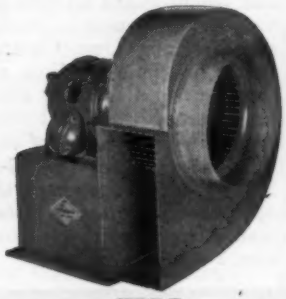
for Homes
Stores
Offices
Factories
Institutions



"B" ASSEMBLY Belt Drive



SERIES 2000
Insulated Package Units



TYPE E
Direct Drive

Ask your Jobber to write for "Blower File" FREE

GRAND RAPIDS DIE & TOOL CO.
1202 Godfrey Ave., S. W., Grand Rapids 2, Mich.

warehouses after July 1. But they warn you that the suggestion is an iffy.

They urge you to be sure to place your order as quickly as possible now for any steel you can use that may be open-ended after July. Plate is generally regarded as easy *if* there is no change in the situation. It is urged you place the order now for delivery as soon as the "free" steel comes out of the CMP open-end. Place the order without the CMP symbol and make clear it will be used outside of assigned quotas, and place your order for delivery in the third and fourth quarters. Incidentally, it is always suggested that the big interests, with big needs, may be able to demonstrate that their needs, in some categories, should be preferred.

It is believed your order will be placed on the mill schedule, subject to everything that has already been said in this letter about the scramble system; your order will be taken in the sequence in which it is received, and it will be booked as in peacetime. Obviously, if there is no material and there are no facilities and if other obstacles intervene, your order will be rolled when the opportunity presents itself in the future. When you talk over the situation with the men who know your problems here you are constantly made aware of the thought that all future hopes and anticipations are qualified by the assumption that there will be no material change in the urgency of military needs. You become conscious that they seem to have the reservation in their minds that complete upsets in the present outlook are not impossible.

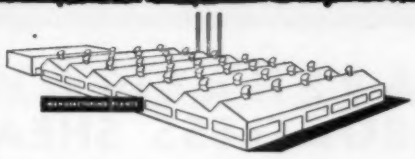
They are not very hopeful about the probability of an easy supply of light gauges, galvanized or black sheets. Again and again they insist that firm allotments or open-end supplies depend altogether upon smaller schedules for military needs. Casting prob-

Order from PEERLESS

• Your requirements for complete warm air heating needs—including Steel furnaces—*repair parts for all makes of furnaces and boilers.* Fittings, registers, blowers, asbestos paper, electric controls, etc. Orders will be filled as rapidly as present conditions will permit.

PEERLESS FOUNDRY COMPANY

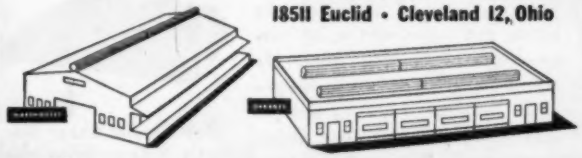
1855 Ludlow Ave. **Indianapolis 7, Ind.**



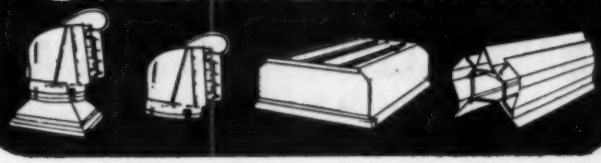
We back you up on the performance of Swartwout AIRMOVERS

when installed under our guidance. You can handle a wide range of roof ventilation jobs with this well-established line of scientifically designed ventilators. Let us help you with your industrial and commercial roof ventilating problems.

THE SWARTWOUT COMPANY
18511 Euclid • Cleveland 12, Ohio



Swartwout VENTILATION SPECIALISTS



IT SAWS! IT FILES!

A PORTABLE POWER-SAW AND FILE

New

MULTI-PURPOSE TOOL

SAVES TIME — SAVES MONEY

★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable . . . carry it from job to job.

QUICK DELIVERIES ON AA-5 PRIORITY OR BETTER

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only $45.00. May also be obtained complete with heavy duty drill at $90.00, or with high-powered, lightweight drill at $83.00.

LIBERALLY GUARANTEED

SAW-CHIEFS are guaranteed to give complete satisfaction. Your money refunded if the SAW-CHIEF does not save hours of labor on countless operations.

Phone your jobber for demonstration today or write us direct!

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CHICAGO PRECISION EQUIPMENT CO.

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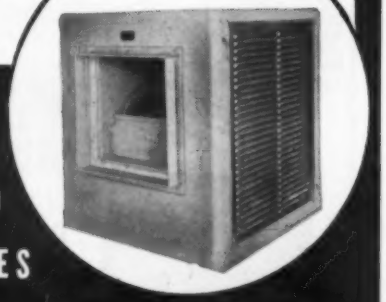
SNO-BREZE



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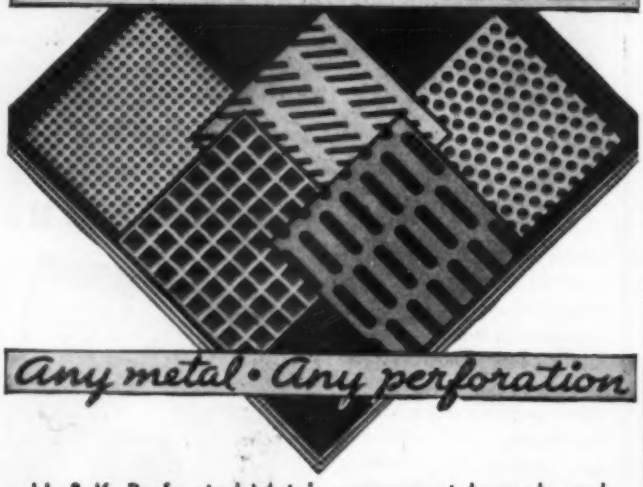

Any metal • Any perforation

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Tell us your requirements and we will send booklet showing actual sizes of perforations.

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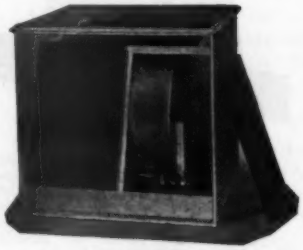
5649 Fillmore Street, Chicago - 114 Liberty Street, New York

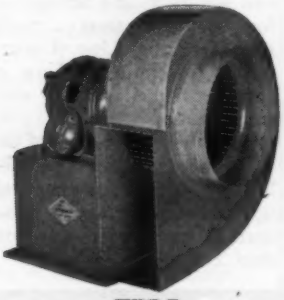
Properaire • AIR MOVING EQUIPMENT

BLOWERS
EXHAUSTERS
FANS
for Homes
Stores
Offices
Factories
Institutions

"B" ASSEMBLY Belt Drive



SERIES 2000
Insulated Package Units



TYPE E
Direct Drive

Ask your Jobber to write for "Blower File" FREE

GRAND RAPIDS DIE & TOOL CO.
1202 Godfrey Ave., S. W., Grand Rapids 2, Mich.

warehouses after July 1. But they warn you that the suggestion is an iffy.

They urge you to be sure to place your order as quickly as possible now for any steel you can use that may be open-ended after July. Plate is generally regarded as easy *if* there is no change in the situation. It is urged you place the order now for delivery as soon as the "free" steel comes out of the CMP open-end. Place the order without the CMP symbol and make clear it will be used outside of assigned quotas, and place your order for delivery in the third and fourth quarters. Incidentally, it is always suggested that the big interests, with big needs, may be able to demonstrate that their needs, in some categories, should be preferred.

It is believed your order will be placed on the mill schedule, subject to everything that has already been said in this letter about the scramble system; your order will be taken in the sequence in which it is received, and it will be booked as in peacetime. Obviously, if there is no material and there are no facilities and if other obstacles intervene, your order will be rolled when the opportunity presents itself in the future. When you talk over the situation with the men who know your problems here you are constantly made aware of the thought that all future hopes and anticipations are qualified by the assumption that there will be no material change in the urgency of military needs. You become conscious that they seem to have the reservation in their minds that complete upsets in the present outlook are not impossible.

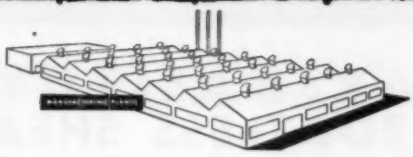
They are not very hopeful about the probability of an easy supply of light gauges, galvanized or black sheets. Again and again they insist that firm allotments or open-end supplies depend altogether upon smaller schedules for military needs. Casting prob-

Order from PEERLESS

• Your requirements for complete warm air heating needs—including Steel furnaces—*repair parts for all makes of furnaces and boilers.* Fittings, registers, blowers, asbestos paper, electric controls, etc. Orders will be filled as rapidly as present conditions will permit.

PEERLESS FOUNDRY COMPANY

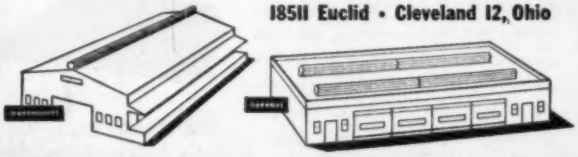
1855 Ludlow Ave. **Indianapolis 7, Ind.**



We back you up on the performance of Swartwout AIRMOVERS

when installed under our guidance. You can handle a wide range of roof ventilation jobs with this well-established line of scientifically designed ventilators. Let us help you with your industrial and commercial roof ventilating problems.

THE SWARTWOUT COMPANY
18511 Euclid • Cleveland 12, Ohio



Swartwout VENTILATION SPECIALISTS

IT SAWS! IT FILES!

A PORTABLE POWER-SAW AND FILE

New

MULTI-PURPOSE TOOL

SAVES TIME — SAVES MONEY

★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable . . . carry it from job to job.

QUICK DELIVERIES ON AA-5 PRIORITY OR BETTER

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only $45.00. May also be obtained complete with heavy duty drill at $90.00, or with high-powered, lightweight drill at $83.00.

LIBERALLY GUARANTEED

SAW-CHIEFS are guaranteed to give complete satisfaction. Your money refunded if the SAW-CHIEF does not save hours of labor on countless operations.

Phone your jobber for demonstration today or write us direct!

ORDER SAW-CHIEF TODAY

CHICAGO PRECISION EQUIPMENT CO.

920 SO. MICHIGAN AVE., CHICAGO 5, ILLINOIS

BOOST PRODUCTION SCHEDULES WITH

MARSHALLTOWN THROATLESS SHEARS

★

CUT ANY SHAPE

★

CUT ANY SIZE SHEET

★

No. 18 HAND POWER

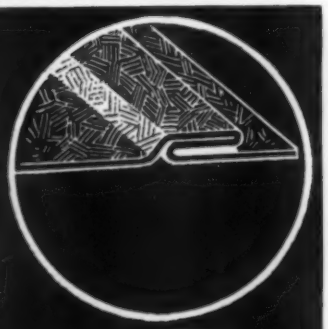
Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. No matter what type of cutting—either irregular shapes or straight splitting—from ANY size sheet, you'll quickly find that the Marshalltown Throatless Shear is the most profitable tool in the shop.

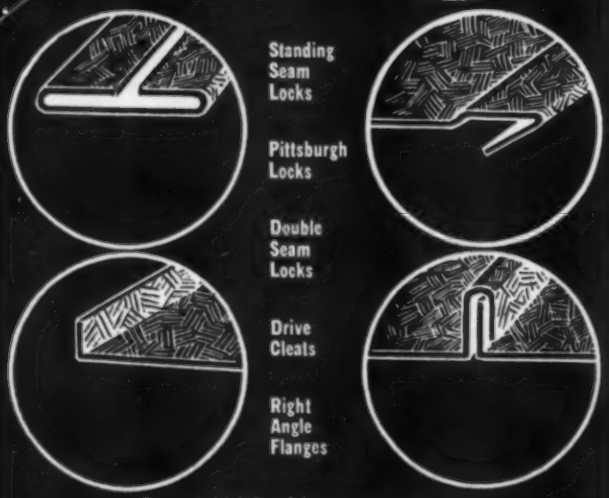
Get Special Shear Bulletin today. Gives details of sizes from 18 gauge to one-half inch capacity.

MARSHALLTOWN MFG. COMPANY

920 E. Nevada St., Marshalltown, Iowa

ALL THESE *Standard Shapes* made with **LOCKFORMER**





Over 5,000 Lockformers now in use.

Write for illustrated catalog

THE LOCKFORMER COMPANY

4615 Arthington St. Chicago 44, Illinois

lems are still acute and all foundry products are very tight. Broadly speaking, they anticipate that what you get from foundries will continue to be tight after July 1 for an indeterminate period. From your standpoint the foundry situation will continue definitely to be worse than steel.

Cutbacks obviously are the key to the situation. Your friends here say there have not yet been cutbacks in the volume necessary to do you much good. They suggest that you wait and see how great the cutbacks will be after July 1. You get the impression they do not think there will be the huge cutbacks expected and that they do not think the cutbacks will come as fast as the announcements might lead you to believe.

How Large Actual Cutback

Apparently the size of the cutbacks is related to the efficiency of the new Japanese "suicide" planes. Okinawa opposition apparently has been prolonged beyond expectations. It has been intimated that in the broadest sense the operations against the Japanese have been designed to feel out which form of major attack shall be used for the final campaign which will defeat them. The cutbacks apparently will be influenced by the emphasis placed on the use of the Army, the Navy, or the Air Forces. It is indubitable that the war must come before all other needs. The actual cutbacks must depend upon the plan of the armed forces. And it is obvious the armed forces cannot show their hands until the final campaign has reached such a stage and such momentum that the result of inevitable victory cannot be endangered.

You will read of a reduction of 6 to 8 per cent during the third quarter, and you may have read Krug's

WILL WILLIE WILLIAM BILL

4 Little "Fitting" Guys Fighting For You!

Will cuts installation costs—Willie makes fittings fit—William keeps prices down to bed rock—and Bill sees that there is stock near you.

FLASH NEWS! Complete, simplified line Gravity Pipe and Fittings now available on rated orders.

FREE: Complete, easily understood gravity pipe and fittings catalog showing full simplified line. Write Dept. 2 for prices and catalog.

THE WILLIAMSON HEATER COMPANY
CINCINNATI 2, OHIO

WILLIAMSON
WARM AIR FURNACES

estimate that cutbacks will bring war production down by 13 per cent during the fourth quarter. It has been prognosticated that by July, 1946, war production will be reduced by 40 per cent. Other prophets insist by January 1, 1946, the war production will be down by 30 per cent. These predictions stem from those civilians in Government who should be able to make good guesses. Yet, if you would know how confusing these figures may be, take the announcement of aircraft cutbacks. Army Air Forces told us their program will be down 30 per cent by the last day of the year and 45 per cent at the end of 1946. They used the actual number of planes in making the estimates rather than the real significance of the fighting value of the planes which are to be eliminated. What counts is the airframe weight and, consequently, the dollar value involved. On this basis it is estimated the cut in airframe weight will actually be about 15 per cent. The planes now building are larger and much swifter and they will be built by a smaller number of men in a smaller number of factories.

The war in Europe has smashingly demonstrated that the weight and volume of the equipment and materiel used in war saves the lives of soldiers and brings victory more quickly. It is a platitude to repeat that war is waste. But it cannot be repeated too often that waste in the use of the things that destroy an enemy quickly is utterly justified by the successful result. It is this aspect alone that is an irrefutable reason why the armed forces are right when they pile up reserves and surpluses that eventually may appear wasteful. We can grasp the logic of this proceeding. But it is difficult to understand the lack of public candor in the communications of the civil war agencies to the business community. We know, here in the Capital, that millions of people throughout the country

BARTH U. S. A.

FOOT SQUARING SHEAR

A real Shear in every way for cutting 18 gauge material. Full 36 inch cut. Complete with front, back, side, and bevel gauges.

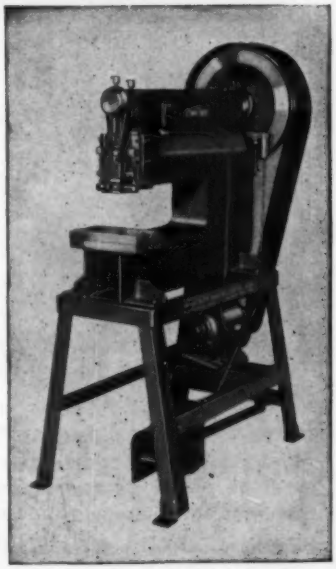
Ask Your Dealer

THE BARTH MANUFACTURING CO.
MILLDALE, CONN.

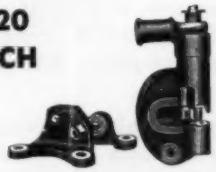
WHITNEY-JENSEN PRODUCTS
30 YEARS EXPERIENCE

POWER PUNCH PRESSES

Two sizes, 12" (No. 129) and 18" (No. 130) throat depth. Capacity 10 tons, length of stroke 1¼", stroke adjustment 1¾", die space 6". Economical small size machines for accurate work. Whitney-JENSEN construction features insure durability. Full data on request.



No. 20 PUNCH



Powerful screw press action with ball bearings in screw race gives great punching power in a light weight tool. Capacity ½" hole in ½" iron, weight only 20 lbs.

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

LINE UP NOW WITH ECON-O-COL STOKERS

. . . to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

ECON-O-COL AUTOMATIC COAL BURNER
THE SHIELD OF QUALITY

ECON-O-COL
The "Stronghearted" Stoker
BUILT BY COTTA TRANSMISSION COMPANY • ROCKFORD, ILLINOIS

Furblo

Furblo sectional construction means quick, labor-saving installation.

Furblo long hour duty motors are the quiet, air conditioning type; no radio interference; rubber mounted; meet all power company requirements and all of your demands for a furnace blower of unsurpassed economy, simple installation and trouble-free service. Write for complete details today.

Furblo Blowers improved over a period of years by capable engineers is your assurance of finest performance from finest equipment.

FURBLO CO., HERMANSVILLE, MICH.

believe there is no remote doubt that the civilian economy will be able to throw into gear in a big way on July 1. We know this faith is based upon reports in the daily newspapers, which in turn are based upon Government releases. It requires careful and repeated readings to actually sense the caution which vitiates the force of many implications. It is an error to assume that Government has loosened its grip on your affairs. No one knows how long Washington will exercise these major controls over business.

◆

News Affecting Conversion

(*Continued from page* 57)

backs. Where a customer is a prime contractor or subcontractor under a contract that has been cut back (not terminated) he may continue to accept delivery at a reduced rate of any special item, when the supplier notifies the customer in writing that unless he is permitted to make continued deliveries he would be unable to resume shipments at a later date. Deliveries, then, must be rescheduled so as to bring the customer's inventory down to the limits set under PR 1 and CMP 2 within six months.

◆

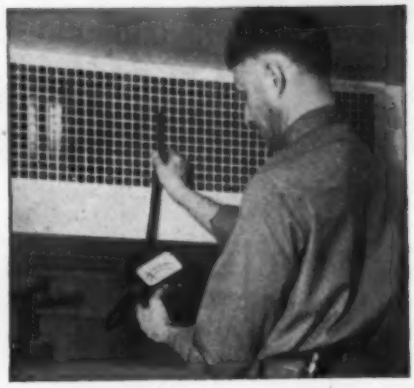
Loans for Small Business

SMALL manufacturers, making essential civilian products, will now be able to obtain loans from the Smaller War Plant Corporation more easily and quickly under a two-fold liberalized program.

By unanimous vote of its board of directors, SWPC has provided:

(1) Regional loan agents may make loans for war

Alnor VELOMETER



★ all purpose air velocity meter

Instantaneous, direct readings of air speed measured in feet per minute with the *Alnor* Velometer give you the quick, accurate information on air movement needed to check operation of blowers, fans, air conditioning installations, and similar equipment. No calculations, no timing, no conversion tables; read velocities direct from the Velometer scale. Extension jets permit accurate readings in many locations that would be completely inaccessible with other means of measurement.

The Velometer is made in several standard ranges from 20 fpm to 6,000 fpm, and up to 3 inches static or total pressure. Special ranges available as low as 10 fpm and up to 25,000 fpm velocity and 20 inches pressure.

Write for Bulletin No. 2448-E.

Illinois Testing Laboratories, Inc.

419 NORTH LA SALLE STREET • CHICAGO 10, ILLINOIS

HERE'S HOW TO WIN FRIENDS AND PLEASE CUSTOMERS

Help Furnace Users Save Precious Fuel by Installing E-Z-ON DAMPER Regulators

SMOOTHER OPERATING, rattle-free damper installations result from the use of E-Z-ON Damper Regulators—stepping up the heating efficiency of the furnace, saving money by reducing coal consumption.

E-Z-ON Damper Regulators—standard or "snap-tite" types — are stocked and recommended by your jobber. Profit by using them.

M. A. GERETT CORPORATION

724 WEST WINNEBAGO STREET - MILWAUKEE 5, WISCONSIN

or "essential civilian production" up to $50,000 without awaiting Washington approval, and may make loans up to $100,000 where banks participate for 20 per cent.

(2) All products on the Relative Essentiality List of the Office of Civilian Requirements of the War Production Board will be considered as "essential civilian production," and manufacturers of these products will be eligible for SWPC loans. Products not under the jurisdiction of the Office of Civilian Requirements but on WPB's National Production Urgency List also will be considered essential, and SWPC loans may be made for their production.

◆

How to Buy Gov't Tools

CONTRACTORS still using for war the machine tools and other Government-owned equipment in their private plants may purchase those items necessary to peacetime production at once. Their exclusive use on Government contracts may continue for some time. But when the plant does return to peacetime production, reconversion can be accomplished with a minimum of loss of time and employment. This is a new regulation issued by Surplus Property Board.

Plants affected by the new regulation (No. 6 under the Surplus Property Act of 1944) now operate under "facilities contracts." Such contracts generally grant the contractor the option to purchase all Government-owned plant equipment in his possession at the time his contract to manufacture war items is terminated. Contractors who purchase plant equipment under the new regulation will have to waive such options granted them in facilities contracts. Plant equipment includes

WAYNE
HOME EQUIPMENT
DISTRIBUTOR – DEALER
PARTNERSHIP PLAN

• COMPLETE LINE OF HOME EQUIPMENT
• BROAD ADVERTISING PROGRAM
• SELLING HELPS THAT SELL!

★

WAYNE AUTOMATIC WATER SYSTEMS FOR DEEP WELLS

New streamlined units. Higher peaks of performance and capacity. Sound engineering.

You Make Greater Profits in the Popular Price Range!

WAYNE OIL BURNER CO., FORT WAYNE 4, IND.

Another New Unit Will Be Featured Next Month—Watch For It!

Write for FREE Sample

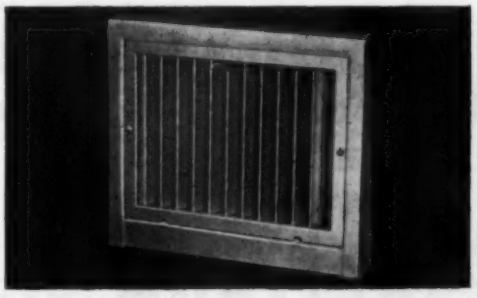
LLOYD'S STAINLESS STEEL FLUX

For Stainless Steel, Monel, Nichrome, Inconel, Chromium, and Molybdenum Alloys, etc. Endorsed by Nation's leading producers of stainless steel. Used extensively by makers of stainless steel products. Adds strength to jobs soldered with all soft solders. One application makes solder adhere evenly and flow deeply into pores of metal. High capillary action pulls solder into seams, leaving no flux pockets to corrode. No noxious, irritating or unpleasant fumes! Speeds up work, saves solder, produces a better job! Investigate now!

LLOYD S. JOHNSON COMPANY

2241-A South Indiana Ave. Chicago 16, Ill.

SOLDERING TECHNICIANS



Priced to help you beat competition!

• This popular, two-piece gravity register is priced to help you get the business against the toughest competition. Adjustable vertical multi-louvres direct the air ahead, or in any desired degree to the left (or by inverting the removable face, air may be directed to the right). Convenient lever handle for adjustment. Now, and post-war, you're ahead of the parade with Waterloo "registers of the future."

Waterloo REGISTER CO.

Established 1902

Waterloo, Iowa Seattle, Wash.

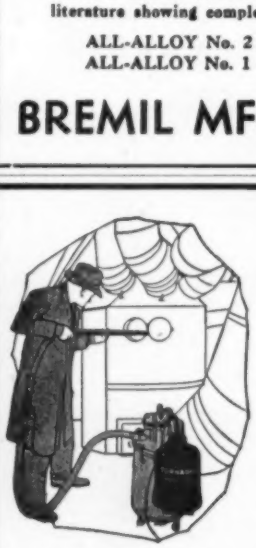
Bremil

PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

BREMIL MFG. CO., ERIE, PA.



Plan now for post-war profits. Get details!

TORNADO
Furnace Cleaners

A PROFITABLE POST-WAR BUSINESS

SET yourself up in business for post-war independence. Equip with a TORNADO Furnace Cleaner. As a leverage for selling service and supplies, it's a winner! Powerful. Portable. Easy to operate.

BREUER ELECTRIC MFG. CO.
5082 Ravenswood Ave., Chicago 40

Solve your roll forming problems with

★ **DAHLSTROM** ★

Roll Forming Machines and Roller Dies

BUILT TO DO YOUR JOBS

Send Sample or Rough Sketch for Quotation

DAHLSTROM MACHINE WORKS
5016 N. Kedzie Ave. — Chicago 25, Ill.

a variety of items ranging from machine tools to cafeteria equipment.

Whenever possible, sales of plant equipment will be at fixed, rather than negotiated, prices. Machine tool prices are set by existing regulations of SPB and of its predecessor, the Surplus War Property Administration. The pricing formula takes into consideration original cost, depreciation and the heavy usage most such tools have undergone in war production. SPB is now initiating studies to determine methods by which prices may be fixed for other items of plant equipment. Items on which pricing formulas have not been worked out will be sold at fair and reasonable prices. These prices are subject to internal review by the owning agency (Army, Navy, etc.).

◆

The Period Program

(*Continued from page* 62)

connection with experimental models.

(15) *Coordination of Cutbacks and Resumptions*

WPB is working with the Procurement Services to distribute procurement cut-backs and new contracts so as to spread the production load as equitably as possible over the Nation and to avoid, where possible, the creation of areas of particularly acute local unemployment.

(16) *Availability of Resources*

Resources of materials, manpower and facilities will become available only as military contracts are actually "cut-back."

Until the "cut-backs" began to have substantial effect, other materials and products may remain in

For Balanced Atmosphere

THERMO-DRIP HEAT-CONTROLLED HUMIDIFIERS

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

SELLS ITSELF

Majestic Heavy Duty Steel **Stoker Furnace**

For Gravity or Forced Air Systems

ENDS THE CLINKER PROBLEM!

• Specially designed and built for stoker firing • Suited for any make or type of domestic stoker • Built-in compartment for convenient dust- and gas-free clinker removal • Interchangeable panels permit placing stoker on either side • Rugged, durable, boiler plate steel construction • Leakproof electric-welded joints inside and out • A high quality, efficient heating plant at an attractive price. • *Backed by Majestic's 38 years of heating experience!*

The *Majestic* Co., 990 Erie St., Huntington, Indiana

short supply. Metals, for example, will probably remain short for two or three months, while sheet steel may remain tight somewhat longer.

It must be clearly understood that the release of a WPB control, or the lifting of a WPB order, must not be considered as giving any assurance that all of the materials required to produce a product will be available. The lifting of the control order does permit the manufacturer to utilize his ingenuity to make substitutions and to take advantage of idle or excess stocks in order to avoid the use of scarce materials.

(17) *Controls of Other War Agencies*

It must be emphasized that the removal of particular WPB controls in no way affects the validity of the continuing controls of other war agencies. In resuming or expanding civilian production, manufacturers remain subject to all applicable regulations of the Office of Price Administration, the War Manpower Commission and other Federal war agencies.

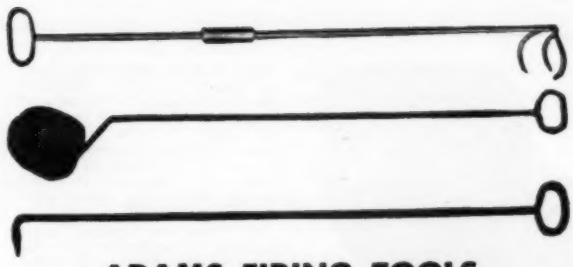
◆

More Construction Without Priority Approval

(*Continued from page* 54)

Limitations on minor capital additions have been relaxed to permit industries manufacturing products formerly listed on Schedule A and all organizations covered by CMP Regulation 5A to take advantage of the exemption on minor capital additions. Formerly these industries and organizations were excluded from the exemption.

The following directions and interpretations are still in effect:



ADAMS FIRING TOOLS

CLINKER TONGS — FURNACE POKERS
ASH REMOVERS — FIRE RAKES
FIRING HOES

Buy Adams Known Quality

THE ADAMS COMPANY

BRIDGE STREET — DUBUQUE, IOWA

SPOT WELD
WITH AN
ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

Complete Range of Sizes
Lifetime Guarantee!

ACME ELECTRIC WELDER CO.
2618B Fruitland Road — Los Angeles 11, Calif.

There's Good Profit for You
in Selling
MONMOUTH HUMIDIFIERS

● For all warm air systems. Descriptive Bulletins and prices on request.

Formerly made by Monmouth Products Co.
Now produced by

THE CLEVELAND HUMIDIFIER CO.
7802 Wade Park Ave., Cleveland 3, Ohio

ELATERITE RIGHT for Roofs

Elaterite is the lasting chemical combination which is the best covering either for new roofs or for renewing old roofs. Elaterite is plastic, workable; does not dry out, become brittle, crack or break. Elaterite will not run or "alligator" on the steepest, hottest roof. Once applied Elaterite requires no further attention or renewal. Write for a sample of Elaterite, the "right for roofs" product today!

ELATERITE PLASTIC PRODUCTS
1955 W. 31st Street — Chicago, Ill.

DASCO
Forged
HAND TOOLS

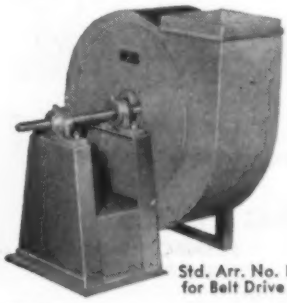
Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

BARBER
Gas Pressure
REGULATORS

Sizes ¼ up
Certified by
A. G. A. Testing Laboratory
Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.



Std. Arr. No. 1 for Belt Drive

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 60 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

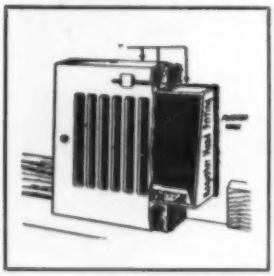
"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street **Milwaukee, Wis.**

MILLIONS WANT IT!



Get this profitable STREEKNO business NOW!

STREEKNO eliminates dirty, streaked walls. Easy to install. HERE'S PROFIT FOR YOU—

Cost of Material—12 Register Packings .....$ 6.60

Plus 5 to 10 minutes installing time per register; your charge to Customers for 12 Registers $24.00

YOUR PROFIT $17.40

Write today for Literature and Details!

EXCEL HEATING and AIR CONDITIONING CO.

3715-19 Belmont Ave. **Chicago 18, Ill.**

REPAIR PARTS

for

STOVES—FURNACES—BOILERS

Also

MODERNAIRE FURNACES

Fittings, Registers, Supplies

DES MOINES STOVE REPAIR CO.

Sam C. Green
Fred R. Green

DES MOINES, IOWA
Since 1869

Sand-Grind-Brush

with Black & Decker Electric Sanders

7" Special **$53**

These husky tools drive abrasive discs, wire brushes, grinding wheels and other attachments . . . make quick work of removing paint and rust, smoothing welds and casting ridges, and many other metalworking jobs. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson-4, Maryland.

Black & Decker

Portable Electric **TOOLS**

DRILLS, HOLE SAWS, DRILL STANDS, LECTRO-SHEARS, BENCH GRINDERS, SANDERS, PORTABLE GRINDERS

Direction 3: Blanket Permission for Miscellaneous Construction.

Direction 5: Construction Projects for Starting Civilian Production (formerly titled "Construction projects for Reconversion").

Interpretation 9: Installation of Equipment and Fixtures.

Interpretation 11: Installation of Machinery and Equipment under subparagraph (e) (20) of L-41 (formerly Direction 2).

◆

Amendments, Interpretations

(*Continued from page* 51)

endar quarter may be totaled for this purpose.

Revocation of Direction 4 to CMP Regulation 9-A now permits a repairman to use the V-3 allotment symbol to obtain copper pipe or tubing and copper-base-alloy pipe and tubing without the former restriction to certain sizes and types.

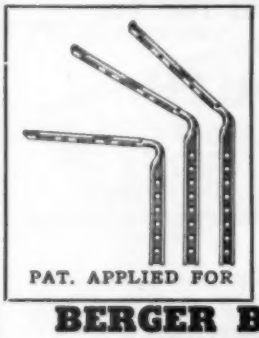
◆

Surplus Metal Sales

SPECIAL sales of idle, excess or surplus steel, copper and copper base alloy, or aluminum in controlled material forms may now be made to anyone without War Production Board authorization and without requiring the buyer to use a CMP (Controlled Materials Plan) allotment symbol or number.

This action, taken through Amendment No. 2 to

IMPROVED!



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No. 12 SHANK

33⅓% STRONGER

IMPROVEMENT IS APPLIED TO No. 15—SQUARE, No. 12—⅛ PITCH, AND No. 25—¼ PITCH.

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SODERING NEEDS

SINCE 1893 the name Allen has stood for finest quality in sodering products . . . and for helpful technical service to the sheet metal and heating industries write for details of Allen's free technical service. It will save you time and money.

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FLOAT VALVE

Designed for evaporative coolers, Small Cooling Towers, Stock Feeders, and has many other uses. They are simple in operation, easy to clean. Made of corrosive resistant materials, iridite plated, with Non Water Absorbing Polysterene Float. Will flow 70 G. P. M. at 20-lb. pressure. ¾" pipe connection. Usual trade discounts. Send for sample. Distributors wanted.

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ELBOWS & SMOKE PIPE

KRAUSER-BOYD, INC.

553 RIVER ROAD • N. TONAWANDA, N. Y.

GRAY'S FULL SIZE BLUE PRINT PATTERNS ARE A GREAT TIME SAVER

SHIP VENTILATOR PATTERNS
From 4" to 48" dia. of base, in sets and single sizes.
ELBOW PATTERNS IN TWO SETS
SET No. 1—1" to 20" in 2-3-4-5-6-7 piece, including T PATTERNS 2" to 20"—152 Patterns.....$2.50
SET No. 2—20" to 40" in 5-6-7-8-9 piece, 105 Patterns, including elbow chart, showing what pattern and number of pieces for required angles, also gives the distance between seams in throat for any required radius up to 96". With the two sets is included a circumference chart showing every 1/8" up to 96" dia.
SETS No. 1 & No. 2 post-paid.....$5.00
45 Degree BRANCH PATTERNS IN TWO SETS
SET No. 3—2" to 12" on 2" to 30"—190 Patterns.....$5.00
SET No. 4—12" to 24" on 12" to 48"—195 Patterns.....$5.00
SETS No. 1-2-3-4 cover everything in blow-pipe work. Patterns sent by return mail post-paid upon receipt of P.O. order or check for $15.00.

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Write for pattern circular giving full information.
Mention American Artisan.

INDUSTRY'S VENTILATING PROBLEMS SOLVED!

No belts to slip. Direct connected. Sets up on the roof out of the way of everything. A compact, self-contained unit easily and cheaply installed. Write for details now, Dept. 9.

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Priorities Regulation No. 13 (Special Sales) removes the special sales restrictions formerly applying to these controlled materials.

Special sales are sales made under Priorities Regulation 13 by persons (including Government agencies) who acquired or made the materials for use and not for sale or resale.

◆

Deferred Steel Orders

TO ENABLE steel producers to resume production and deliveries of steel on deferred (ZW) orders for general steel products placed by distributors pursuant to the provisions of Direction 3 to Iron and Steel Production Order M-21-b-1, the War Production Board May 18 deleted paragraph (b) of Direction 62 to CMP Regulation 1.

The action was taken to make certain that producers would not have to decrease production of general steel products due to late cancellation of war contracts which might temporarily leave them with open mill space and no orders to fill it. Paragraph (b) had provided that no producer could produce or deliver any steel on orders bearing the CMP allotment symbol ZW placed under Direction 3 to Order M-21-b-1.

Direction 3, issued December 4, 1944, provided for reasonable increases in warehouse stocks of steel products when they could be effected without interference with the completion of war production on schedule. Direction 62 to CMP Regulation 1, issued February 27, 1945, suspended the operation of Direction 3 to Order M-21-b-1 because of the then existing critical shortage of most steel products. Deletion of Paragraph (b) of Direction 62 again permits increasing of warehouse stocks of steel products.

STATE SUPPLY CO.

WHOLESALE DISTRIBUTORS
SHEET METAL
FURNACES
AIR CONDITIONING SUPPLIES

MANUFACTURERS
Are You Looking For An
AGGRESSIVE DISTRIBUTOR?

We are a well-established, financially sound firm distributing a number of nationally known lines in Northeastern Ohio. We are interested in establishing new lines... for after the war ...NOW. Write for more information.

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CUTS LEFT

Compound Action
AVIATION SNIPS

Used extensively by leading aviation and metal working industries and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
- All Parts interchangeable.
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WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line

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ESTABLISHED 1848 NEWARK 7, N. J.

Vernois PARTS

TO keep Vernois furnaces functioning at the highest possible efficiency, use only original Vernois parts for all repairs. Order Vernois parts direct from the manufacturer of famous Vernois furnaces.

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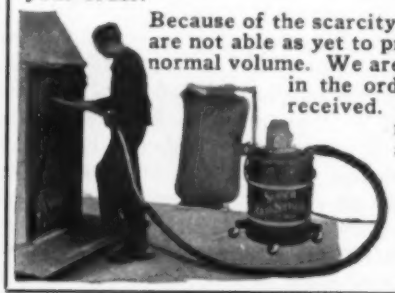
MT. VERNON, ILLINOIS

Anybody Can Buy A Red Streak Now

All "red tape" has been removed from the purchase of Red Streak Furnace Cleaners. No priority, purchase certificate or qualification is necessary—just send in your order.



Because of the scarcity of some materials we are not able as yet to produce Red Streaks in normal volume. We are filling orders strictly in the order in which they are received. Repair and replacement parts are freely available to all.

National Super Service Co., Inc.
1946 N. 13th Street,
Toledo 2, Ohio

Remember COLE HOT BLAST Gas-Fired FLOOR FURNACES

Will again be on the market after it's over, but now it's war work.

COLE HOT BLAST MFG. CORP.
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Write for Catalog and Prices

SPEED UP ORDERS with a BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, circular or irregular. FASTER — Precision — accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR MFG. CO.
3004 West 111th St.
CHICAGO (43), ILL.

☆ WAR TIME

A second star, signifying the third consecutive Army-Navy Production Award, was added to the "E" flag of **The Bead Chain Manufacturing Company** of Bridgeport, Connecticut. Presentation was made by letter by Robert P. Patterson, Under Secretary of War. The Award was received without ceremony and was acknowledged on behalf of the employees by W. G. Bryant, president of the company.

The Bead Chain Manufacturing Company has been supplying identification tag chains to the Army and Navy and has produced countless Bead Chain retainer chains and special chain assembles for use on ships, planes, tanks and other essential military equipment. In addition, they have manufactured huge quantities of radio and radar components.

◆

When the **Peerless Electric Company** of Warren, Ohio, was awarded the Army-Navy "E" pennant recently, one of the proudest witnesses of the ceremony was Mrs. E. W. Gilmer, widow of the man who founded the company 52 years ago. Mrs. Gilmer's daughter is the wife of Ralph Kroehle, president of the company.

The award, made by Capt. C. V. S. Knox, USN, was for excellence in the production chiefly of direct current motors for the Navy. The company's peace-time products are electrical apparatus, including AC and DC motors and generators which are widely used in industrial installations and by manufacturers of heating and air conditioning equipment.

◆

A. C. Horn Company, 43-36 Tenth St., Long Island City, N. Y., manufacturers of protective coatings, has published a Flash Bulletin telling the story of the thrilling experience of Vice-President **R. E. Bishop** and Employee **John Kreidler** of the Varnish Factory (President of Local Union No. 1482 of the AFL) who were enrolled by the Navy as "shipmates, first class" aboard the LCI (L)-352, to learn the service of Horn products, on a trip arranged by the Industrial Incentive Division of the U. S. Navy, along with representatives from WPB and 12 other companies.

Wearing Navy garments waterproofed by Horn coatings they endured the icy spray on the bridge of the Navy ship of war as the vessel shoved off into the stormy Chesapeake Bay, ashore at Little Creek, Va., to inspect a commando training course, Camp Bradford, a tour of a huge LST where guests were allowed to fire the machine guns, inspect repair shop facilities and learn how quickly sea water, rust and disintegration destroys equipment and the vital need for protective coatings.

They witnessed a mock invasion, fired anti-aircraft guns and finally back up the Virginia coast, and a "crash" landing, awed by the responsibility on the shoulders of Horn and other organizations.

***PRECISION PROCESSED* DOUBLE ADJUSTABLE GRILLES**

Available in all standard sizes. Special sizes made to order. Write today for catalog of complete line of registers and grilles.

STANDARD

FOR PRODUCTION SPEED-UP — Specify Precision Processed STANFORATED Perforations. Industrial Screens, Filters, Guards, etc., made to specifications for vital industries. Handy catalog sent on request.

STANDARD STAMPING & PERFORATING CO.
3117 W. 49th PLACE • CHICAGO, ILLINOIS

TRADE NEWS ☆

The Clayton & Lambert Manufacturing Company, 14247 Tireman Ave., Dearborn, Michigan, manufactures firepots, blow torches and metal stamping assemblies in peace times, but during the war, in addition to operating its Dearborn, Michigan, Heat Tool Division at capacity, has been producing millions of heat treated drawn steel 40 MM cartridge cases monthly for the U. S. Navy in its Ordnance plants at Detroit and Ashland, Kentucky.

◆

Some of the new equipment planned by **Aeroil Products Company** of West New York, N. J., has been successful in fulfilling Army and Navy war requirements, the Aeroil Plast-O-Dip tank, for plastic strip coating of parts and tools being an example. Industrial firms may find wide use for this portable tank in packaging and preserving machinery parts for shipment and storage in the post-war era, as well.

The Army-Navy "E" award for excellence in production was awarded Plant No. 1 of this company in 1944.

Aeroil plans a reinstatement of their extensive export business all over the world after total Victory has been won.

◆

Technical Ply-Woods, 228 N. LaSalle St., Chicago 1, has completed all war contracts.

The following are now or have been in service:

Sgt. Allan Crawfurd, former advertising manager, is now in the Army Air Corps.

Lt. (j.g.) Howard G. Hansen, Engineer, is on Navy sea duty.

J. M. Stoner, manager, Recreation Shops, subsidiary, World War I and II, recently discharged.

The office organization purchased a total of about $30,000 war bonds.—James R. Fitzpatrick.

◆

The Wheeling Plant of the **Wheeling Corrugating Company**, Wheeling, W. Va.,, is in receipt of the fifth Army-Navy "E" award by the War Department. The award gives the employees and management the privilege of inserting the fourth White Star in the Army-Navy "E" flag that flies over the plant.

The original award was made by Under Secretary of War, Robert P. Patterson, on October 24th, 1942. Again in September 1943 the Wheeling Corrugating Company received the second award carrying the White Star, while the third award was received in April 1944, and the fourth award in December 1944.

"This fourth renewal is a symbol of high achievement over a long period, and you may now fly the Army-Navy Production Award flag, with its four White Stars, for a full year before being considered again by the Army and Navy Boards for Production Awards."—Robert P. Patterson, Under Secretary of War.

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GRAVITY AND FORCED AIR
FURNACES
DURABLE • EFFICIENT • DEPENDABLE • ATTRACTIVE
THE FOREST CITY FOUNDRIES CO.
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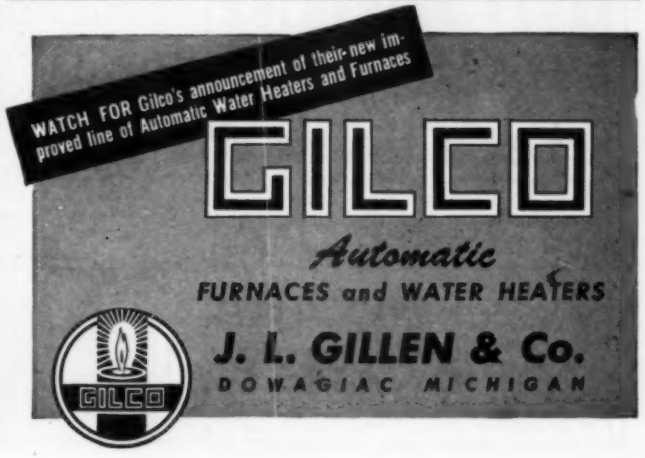
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Interlocking Combustion Chambers . . . Baffles
Insulating Cement Steel Furnace Linings

PECORA
Pecora Asbestos Furnace Cement, Stove Cement, and Boiler Putty

WALSH—Missouri **PYRO—Ohio**
Fire brick, hearth and baffle mix, cupola block, plastic furnace lining

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REPAIR PARTS
For all
Furnaces - Boilers - Stoves
GUARANTEED TO FIT

Our stock of repair parts is complete at this time. Send in your orders NOW.

Also a full line of heating supplies.

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PROMPT SHIPMENT

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REPAIRS FOR ANY FURNACE BOILER OR STOVE

REPAIR PARTS FOR ANY FURNACE, BOILER OR STOVE

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OMAHA STOVE REPAIR WORKS
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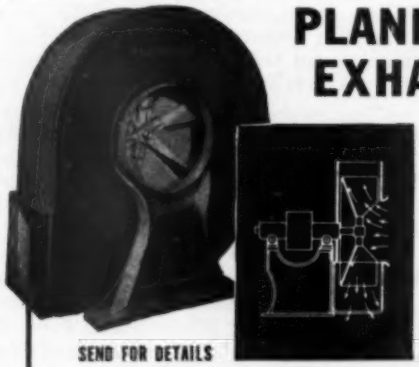
SINCE 1882

PLANING MILL EXHAUSTERS



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RESULT: higher overall efficiency, lower maintenance cost, less time out for service and repairs.

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Let's finish the Job

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MORE
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THE COMPLETE DRIVE CLEATING MACHINE

SAVES MORE TIME per joint of pipe, over ordinary hand methods, than any other machine used on square pipe work . . . and it is USABLE MORE OFTEN per job, because it edges the pipe and makes drive cleats to join them together.

NOW TWO SIZES

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Takes All Sizes Up to 12"

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Takes All Sizes Up to 18"

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Foot shear needs repairing. Rolls in good condition.

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WANTED
Furnace installers
Sheet metal workers
Eavestrough mechanics
Steady work—top wages
Paid vacation with Bonus
Our proposition will interest you.
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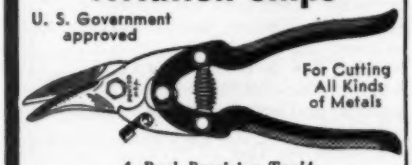
U. S. Government approved



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A Real Precision Tool!
Maximum Power—Minimum Effort
Right and Left Cut

Blades made from alloy steel hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades. Case hardened bolts. Made in four different types. Write for catalog S.

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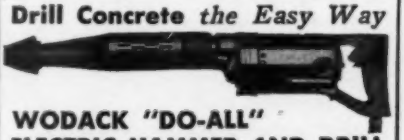
Drill Concrete *the Easy Way*



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Saves time and money installing expansion anchors. Drills concrete to 1⅜" dia.; metal to ⅜". Two tools in one. Easy to maintain. Universal motor. Star drills in 17 diameters. Also chisels, bull points, etc. Write for bulletin No. 644.

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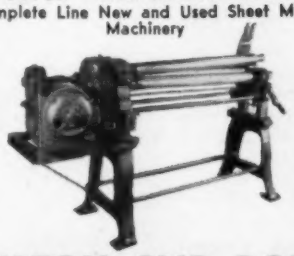
In Stock—Immediate Delivery

Complete Line New and Used Sheet Metal Machinery



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These machines are new and of our own manufacture. 10 ga. and lighter. 3' to 10' long. Compact, heavy duty, conservatively rated. Power or hand operation. Milton geared slitting shears—new—capacity 3/16 iron and lighter. Length of cutting blades 10 in. Dealer representatives wanted.

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Large and complete stocks! IMMEDIATE SHIPMENT

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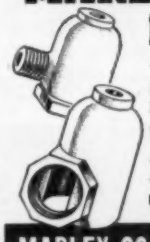

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*Finer, more uniform spray
*Effective operation at Low Pressures *No internal parts

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YAGER'S Soldering Salts — Past Reg.

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

½ lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.

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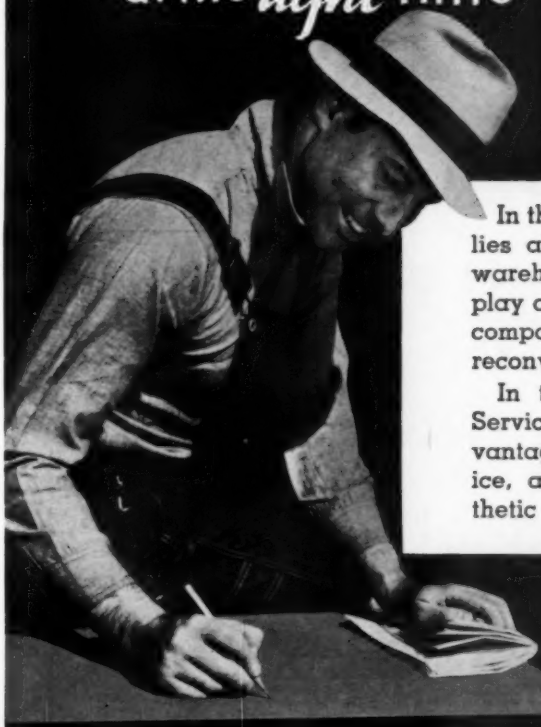

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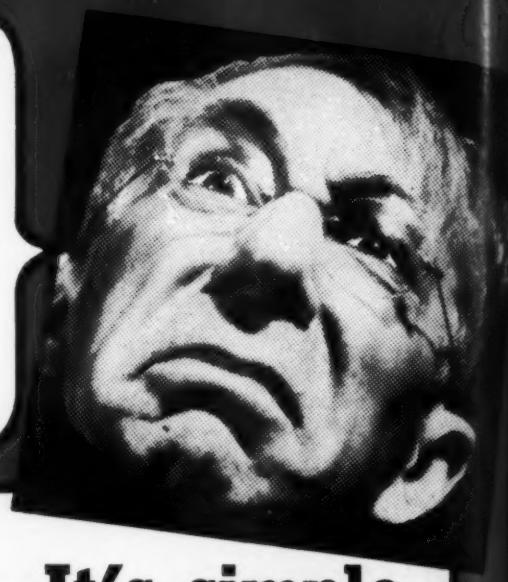

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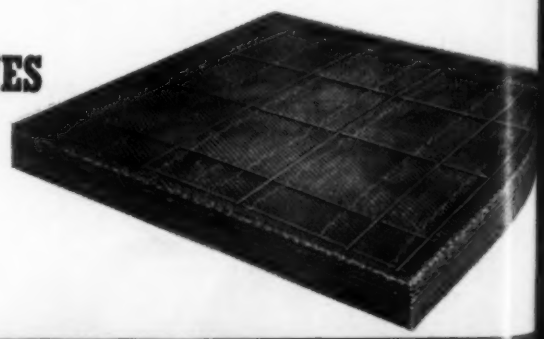

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